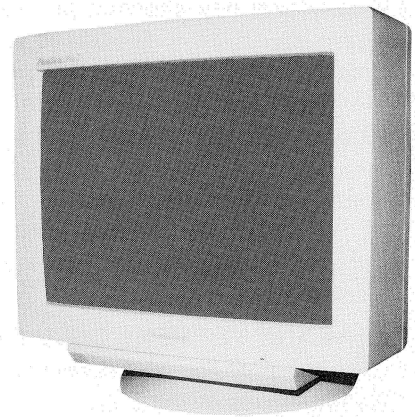
ORDER NO. FTD950205307C

Service Manual

Multi-Scan Color CRT Display

Chassis No. HV4S



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Panasonic

Matsushita Electric Industrial Co., Ltd.
Display Monitor Division

SAFETY PRECAUTIONS

1 CAUTION:

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide lines.

2 SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such areas as the associated flyback and yoke circuits.

3 FIRE & SHOCK HAZARD

3-1 Insert an isolation transformer between the CRT display and AC power line before servicing the chassis.

3-2 In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result of the short circuit.

3-3 All the protective devices must be reinstalled per original design.

3-4 Soldering must be inspected for possible cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

4 LEAKAGE CURRENT COLD CHECK

4-1 Unplug the AC cord and connect a jumper between the two prongs on the plug.

4-2 Turn the CRT display power switch "on"

4-3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part on the CRT display such as the metal frame, screwheads, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

5 LEAKAGE CURRENT HOT CHECK

5-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

5-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15μF capacitor between each exposed metallic part and a good earth ground (as shown in Fig.1).

5-3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15μF capacitor.

5-4 Move the resistor connection to each exposed metallic part and measure the voltage.

5-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

5-6 Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0 milliamp. In the case of a measurement exceeding the 5.0 milliamp value, a rework is required to eliminate the chance of a shock hazard.

Note: High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display chassis to prevent shock hazard.

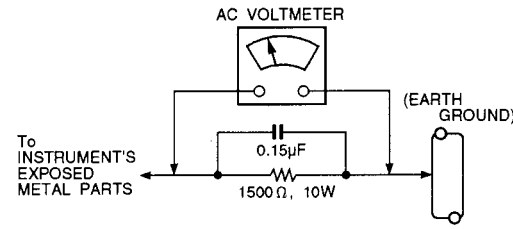


Fig. 1

6 IMPLOSION PROTECTION

All Panasonic picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only Panasonic replacement picture tubes.

7 X-RADIATION

WARNING : The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT displays which are important for safety. These parts are identified by the international symbol ⚠ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards. Do not modify the original design without written permission of the Panasonic Industrial Company or this will void the original parts and labor guarantee.

SERVICE WARNING

TO PREVENT RISK OF ELECTRIC HAZARD, TEST BEFORE TOUCHING. Where, after operation of the fuse in the live side of the mains supply, some components of the equipment that remain under voltage might represent a hazard during servicing.

GENERAL INFORMATION

1. OUTLINE

TX-D2151 is 21 inch (20"V) multi-scan color CRT display with the following nice features.
OSD (on screen display) Control is newly introduced, which allows easy user adjustment.
Power saving function, which helps saving energy, is also one of the highlights of this model.

2. FEATURES

2-1 Power Saving
- Built in Power Saving function based on VESA-DPMS standard.
- Power energy shall be saved by controlling the circuit in accordance with power save signal from computer.

2-2 OSD function
- OSD (on screen display)function is new and excellent man-machine interface.
  Any one is able to set up the picture as he like through OSD menu.

2-3 Self Test function
- Self Testing picture comes out by pushing [1] -key in the case of no-connection with computer or power saving operation.
  This function shows if monitor is alive or not and can be used for self aging test.

2-4 Power Supply with high power factor
- Power Supply with high power factor enables to utilize AC power efficiently and it will meet IEC555-2.

2-5 Ergonomic design
- Low emission design to meet MPR II
- ESF (Electro static field) free coating on CRT

2-6 Multi scan with digital technology
- 8 bit micro computer controls the circuit operation to meet with wide range signal of f_H=30~82kHz and f_V=50~160Hz. So VGA640x350, VGA640x400, VGA640x480, SVGA800x600, 1024x768, 1152x900 and 1280x1024 mode are applicable.

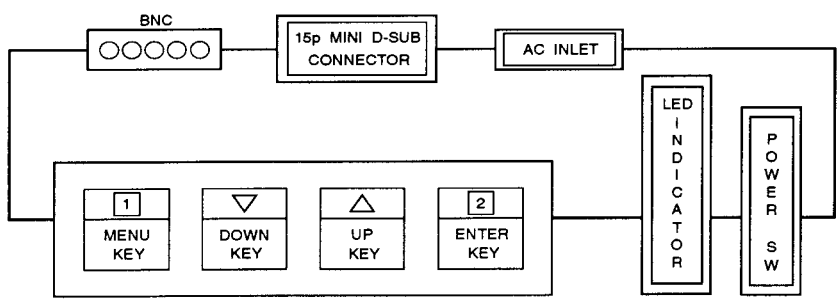
2-7 3 Factory presets, 5 Reservation settings, 13 User Memory settings.
- 3 standard modes are preset at the factory.
- 5 modes are reserved at the factory.
- 13 user memories are available to set the users own timing and display information.

2-8 Flat Face and fine dot pitch
- Flat face CRT with fine dot pitch 0.25mm gives a comfortable sight of the screen.

2-9 Superior display performance
- Good focus by sophisticated gun and dynamic focus circuit
- High brightness
- Minimized distortion by correction circuit
- Good convergence
- Users enjoy full scan image for graphics

SPECIFICATION

1. DIAGRAM



3.1 POWER SW, LED, [1]-key (MENU), ▽-key (DOWN), △-key (UP), and [2]-key (ENTER) are located on the front panel.

3.2 Signal connectors and AC inlet are located on the back side of the cabinet.

3.3 OSD menu includes the following function.
CONTRAST, BRIGHTNESS, H/V SIZE, H/V POSITION, V. PIN-CUSHION, TRAPEZOID, DEGAUSS, PARALLELOGRAM, COLOR SELECT, USER COLOR, VIDEO INPUT LEVEL, VIDEO INPUT SELECT, H/V. MOIRE REDUCTION, ROTATION, DISPLAY FREQUENCY, RECALL.
- CONTRAST can be directly controlled with ▽/△-key.
- VIDEO INPUT SELECT can be directly controlled by pushing [2]-key.
- With sync signal, OSD menu appears by pushing [1]-key.
  With sync signal, self test menu appears by pushing [1]-key.

2. MECHANICAL SPECIFICATIONS

..... refer to the attached drawing

2.1 Dimension Height : 478 mm (18.8") typ.
Width : 505 mm (19.9") typ.
Depth : 510 mm (20.1") typ.

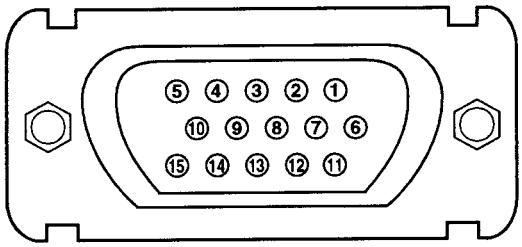
2.2 Net Weight : 28.0kg (58.5 lbs) typ.

3. CONNECTORS

3.1 Signal connector: 15P Mini D-Sub X 1
BNC connector X15

3.2 AC inlet: CEE 22 typed connector

15P Mini D-Sub Pin assignment



1 ... RED	6 ... GROUND	11 ... GROUND
2 ... GREEN	7 ... GROUND	12 ... – (OPEN)
3 ... BLUE	8 ... GROUND	13 ... H.SYNC.
4 ... GROUND	9 ... – (OPEN)	14 ... V.SYNC.
5 ... – (OPEN)	10 ... GROUND	15 ... – (OPEN)

4. CRT SPECIFICATIONS

Part No.	M51KYY140X
Type	21" (19.67" viewable) diagonal
Dot Pitch	0.25 mm
Phosphor	R, G, B Short Persistence
Bulb	DARK TINT
Face	AGRAS COAT
Total Transmission	39.5%

5. ELECTRICAL SPECIFICATIONS

5.1 Standard conditions ... Except special items

Display image	Green, full "H" characters with a border lxine. (7 x 9 dots) Video siganl : 100% duty display area : 380mm x 285mm
Video signal level	0.7Vpp
Contrast, Brightness	Contrast : Max., Brightness : center point
Ambient Temperature	20 ± 5°C (68 ± 9°F)
Input Voltage	AC 120V, 60Hz
Terrestrial magnetism	Vertical field :northern hemisphere field (40μT) Horizontal field : no field
Viewing direction	Parallel to the CRT axis
Measurements	After an initial warming up time of more than 30 minutes.
Ambient light	200±50 IX
Display mode	MODE2 1024 x 768 (60.0kHz, 75Hz)

5.2.1 Power supply ... Commercial power source

Input voltage	AC90 - 264V
Power frequency	50/60 Hz
Input current	1.7A Max. (100V) (*1)
Inrush current (at 20°C)	40 Aop
Power consumption	150W (Typ)

(*1) Input current is reduced to about 60% of our current products by "High Power Factor" technology.

5.2.2 Power Management for Power Saving ...

Power saving system is designed based upon VESA DPMS Standard (Version : 1.0)

1) Power consumption and recovery time.

*1 APM State	SIGNALS			MONITOR POWER CONSUMP-TION	RECOVERY TIME TO ON STATE	INDICATOR
	H. Sync	V. Sync	VIDEO			
ON	*3 NOR-MAL	*3 NOR-MAL	*2 ACTIVE	*4 100%	—	Green
STAND-BY	No Sync or *5 <6Hz	> 40Hz	BLANK	< 30W	< 4s	Yellow
SUS-PEND	>10kHz	No Sync or *5 <20Hz	BLANK	< 30W	< 4s	Yellow
OFF	No Sync or *5 <6Hz	No Sync or *5 <20Hz	BLANK	< 8W	< 20s	Yellow

** The transition time from ON state to each APM states is 5 seconds minimum.

*1 : APM : Advanced Power Management.

*2 : Meas. Condition of power consumption for ON state.
DISPLAY IMAGE : WHITE full "H" characters with a border line (7 × 9 dots).

*3 : NORMAL : see "5.4 ACCEPTABLE TIMING".

*4 : Power Consumption is measured at AC 100-240V.

*5 : Power saving operation is done at least less than specified value in the list.

5.3 Standard timing

- Following total 8 modes are preset in the memory as standard timing at the factory.
- Refer to Fig. 2 as a definition of timing and signal level.
- This SPECIFICATION is specified at STD (1024 x 768) mode unless otherwise mentioned.

TIMING CHART

A	Period
B	Blanking
C	Sync Width
D	Back Porch
E	Active
F	Front Potch

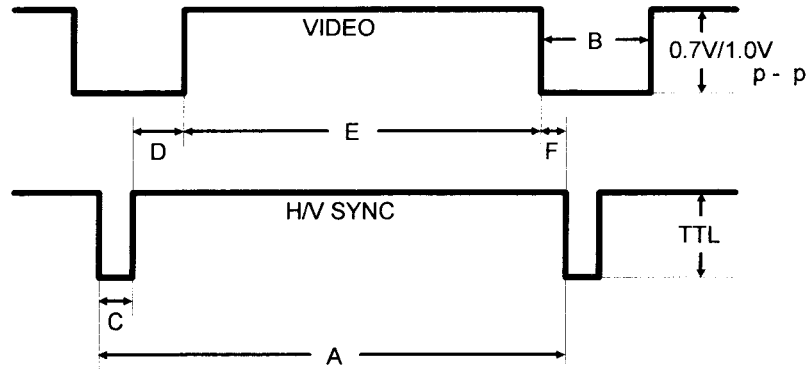


Fig.2

FOR PRESET

		MODE - 1	MODE - 2	MODE - 3
		640 X 480 (60)	1024 X 768 (75)	1280 X 1024 (75)
	DOT CLOCK	25.1745 MHz	78.7500 MHz	135.0000 MHz
H	f H	31.4681 KHz	60.0229 KHz	79.9763 KHz
H	A - PERIOD	31.778 µs (800 dots)	16.660 µs (1,312 dots)	12.504 µs (1,688 dots)
H	B - BLANKING TIME	6.356 µs (160 dots)	3.657 µs (288 dots)	3.022 µs (408 dots)
H	C - SYNC WIDTH	3.813 µs (96 dots)	1.219 µs (96 dots)	1.067 µs (144 dots)
H	D - BACK PORCH	1.907 µs (48 dots)	2.235 µs (176 dots)	1.837 µs (248 dots)
H	E - ACTIVE TIME	25.423 µs (640 dots)	13.003 µs (1,024 dots)	9.481 µs (1,280 dots)
H	F - FRONT PORCH	0.636 µs (16 dots)	0.203 µs (16 dots)	0.119 µs (16 dots)
V	f V	59.9393 Hz	75.0286 Hz	75.0247 Hz
V	A - PERIOD	16.684 ms (525 lines)	13.328 ms (800 lines)	13.329 ms (1,066 lines)
V	B - BLANKING TIME	1.430 ms (45 lines)	0.533 ms (32 lines)	0.525 ms (42 lines)
V	C - SYNC WIDTH	0.064 ms (2 lines)	0.050 ms (3 lines)	0.038 ms (3 lines)
V	D - BACK PORCH	1.049 ms (33 lines)	0.466 ms (28 lines)	0.475 ms (38 lines)
V	E - ACTIVE TIME	15.254 ms (480 lines)	12.795 ms (768 lines)	12.804 ms (1,024 lines)
V	F - FRONT PORCH	0.318 ms (10 lines)	0.017 ms (1 lines)	0.013 ms (1 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Positive / Positive	Positive / Positive

FOR RESERVATION

		MODE - 4	MODE - 5	MODE - 6
		640 X 480 (75)	800 X 600 (75)	1024 X 768 (70)
	DOT CLOCK	31.5000 MHz	49.5000 MHz	75.0000 MHz
H	f H	37.5000 KHz	46.8750 KHz	56.4759 KHz
H	A - PERIOD	26.667 µs (840 dots)	21.333 µs (1,056 dots)	17.707 µs (1,328 dots)
H	B - BLANKING TIME	6.349 µs (200 dots)	5.172 µs (256 dots)	4.053 µs (304 dots)
H	C - SYNC WIDTH	2.032 µs (64 dots)	1.616 µs (80 dots)	1.813 µs (136 dots)
H	D - BACK PORCH	3.810 µs (120 dots)	3.232 µs (160 dots)	1.920 µs (144 dots)
H	E - ACTIVE TIME	20.317 µs (640 dots)	16.162 µs (800 dots)	13.653 µs (1,024 dots)
H	F - FRONT PORCH	0.508 µs (16 dots)	0.323 µs (16 dots)	0.320 µs (24 dots)
V	f V	75.0000 Hz	75.0000 Hz	70.0694 Hz
V	A - PERIOD	13.333 ms (500 lines)	13.333 ms (625 lines)	14.272 ms (806 lines)
V	B - BLANKING TIME	0.533 ms (20 lines)	0.533 ms (25 lines)	0.673 ms (38 lines)
V	C - SYNC WIDTH	0.080 ms (3 lines)	0.064 ms (3 lines)	0.106 ms (6 lines)
V	D - BACK PORCH	0.427 ms (16 lines)	0.448 ms (21 lines)	0.513 ms (29 lines)
V	E - ACTIVE TIME	12.800 ms (480 lines)	12.800 ms (600 lines)	13.599 ms (768 lines)
V	F - FRONT PORCH	0.027 ms (1 lines)	0.021 ms (1 lines)	0.053 ms (3 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Positive / Positive	Negative / Negative

FOR RESERVATION

		MODE - 7 1152 X 870 (75)	MODE - 8 1280 X 1024 (60)
	DOT CLOCK	100.0000 MHz	109.4695 MHz
H	f H	68.6813 KHz	63.7192 KHz
	A - PERIOD	14.560 µs (1,456 dots)	15.694 µs (1,718 dots)
	B - BLANKING TIME	3.040 µs (304 dots)	4.001 µs (438 dots)
	C - SYNC WIDTH	1.280 µs (128 dots)	1.425 µs (156 dots)
	D - BACK PORCH	1.200 µs (120 dots)	2.174 µs (238 dots)
	E - ACTIVE TIME	11.520 µs (1,152 dots)	11.693 µs (1,280 dots)
	F - FRONT PORCH	0.560 µs (56 dots)	0.402 µs (44 dots)
V	f V	75.0616 Hz	59.9992 Hz
	A - PERIOD	13.322 ms (915 lines)	16.667 ms (1,062 lines)
	B - BLANKING TIME	0.655 ms (45 lines)	0.596 ms (38 lines)
	C - SYNC WIDTH	0.044 ms (3 lines)	0.047 ms (3 lines)
	D - BACK PORCH	0.568 ms (39 lines)	0.502 ms (32 lines)
	E - ACTIVE TIME	12.667 ms (870 lines)	16.071 ms (1,024 lines)
	F - FRONT PORCH	0.044 ms (3 lines)	0.047 ms (3 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Sync on Green

FOR ADJUSTMENT

		HV4S - 1 (HV4 - 1) (HV4H - 1)	HV4S - 2 (HV4H - 2)	HV4S - 4 (HV4 - 4) (HV4H - 4)
	DOT CLOCK	22.6000 MHz	40.2480 MHz	86.0645 MHz
H	f H	29.5039 KHz	39.0000 KHz	64.5200 KHz
	A - PERIOD	33.894 µs (766 dots)	25.641 µs (1,032 dots)	15.500 µs (1,334 dots)
	B - BLANKING TIME	6.018 µs (136 dots)	5.988 µs (241 dots)	3.602 µs (310 dots)
	C - SYNC WIDTH	4.115 µs (93 dots)	2.832 µs (114 dots)	1.185 µs (102 dots)
	D - BACK PORCH	1.283 µs (29 dots)	2.435 µs (98 dots)	1.975 µs (170 dots)
	E - ACTIVE TIME	27.876 µs (630 dots)	19.653 µs (791 dots)	11.898 µs (1,024 dots)
	F - FRONT PORCH	0.619 µs (14 dots)	0.721 µs (29 dots)	0.442 µs (38 dots)
V	f V	48.0520 Hz	77.0751 Hz	105.0814 Hz
	A - PERIOD	20.811 ms (614 lines)	12.974 ms (506 lines)	9.516 ms (614 lines)
	B - BLANKING TIME	0.915 ms (27 lines)	0.744 ms (29 lines)	0.480 ms (31 lines)
	C - SYNC WIDTH	0.102 ms (3 lines)	0.103 ms (4 lines)	0.046 ms (3 lines)
	D - BACK PORCH	0.712 ms (21 lines)	0.513 ms (20 lines)	0.356 ms (23 lines)
	E - ACTIVE TIME	19.896 ms (587 lines)	12.231 ms (477 lines)	9.036 ms (583 lines)
	F - FRONT PORCH	0.102 ms (3 lines)	0.128 ms (5 lines)	0.077 ms (5 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Negative / Negative	Negative / Negative

FOR ADJUSTMENT

		HV4S - 5 (HV4 - 5) (HV4H - 5)
	DOT CLOCK	134.9800 MHz
H	f H	82.5061 KHz
	A - PERIOD	12.120 µs (1,636 dots)
	B - BLANKING TIME	2.904 µs (392 dots)
	C - SYNC WIDTH	1.096 µs (148 dots)
	D - BACK PORCH	1.526 µs (206 dots)
	E - ACTIVE TIME	9.216 µs (1,244 dots)
	F - FRONT PORCH	0.282 µs (38 dots)
V	f V	165.0122 Hz
	A - PERIOD	6.060 ms (500 lines)
	B - BLANKING TIME	0.497 ms (41 lines)
	C - SYNC WIDTH	0.036 ms (3 lines)
	D - BACK PORCH	0.376 ms (31 lines)
	E - ACTIVE TIME	5.563 ms (459 lines)
	F - FRONT PORCH	0.085 ms (7 lines)
	SYNC POLARITY(H/V)	Negative / Negative

5.4 Acceptable timing

5.4.1 If your timing is within following specification, this CRT display can automatically function with a certain size and position.

Horizontal: Sync frequency: 30.0 ~ 82.0 kHz
Blanking Time: ≥ 3.0 μS
Back Porch: ≥ 1.25 μS
Front Porch: ≤ Back Porch
Sync Width: ≥ 1.2 μS

Vertical: Sync frequency: 50.0 ~ 160.0 Hz
Blanking Time: ≥ 0.5 mS
Back Porch: ≥ 0.5 mS
Sync Width: ≥ 0.045 mS

5.4.2 • Several items like size, position and distortion can be adjusted through OSD menu, and if you want to keep it, please push the key [1] for memory,or keep the key untouched for about 20 seconds, it is automatically memorized.

NOTE : In case of RECALL, the keys is untouched for about 30 seconds, RECALL function will be cancelled.

Please notice, however, that there is the case you can not get the size and/or position you want, (for example Display Time is too short, then you can't get bigger size of the image.)

5.4.3 The CRT adopted in this CRT display is designed to minimize the moire phenomenon at suitable size for typical display modes. However, there might be a display format among many formats, in which the moire phenomenon appears on this display.

5.5 Signal level and input impedance

5.5.1 Video signal level

This CRT display is adjusted at the factory using 0.7Vp-p/1.0Vp-p video signal, black level is 0V.

5.5.2 Sync signal level

•H/V Separate, H/V Mixed : TTL level
•Sync on Green : 0.286 Vpp

5.5.3 Input impedance

Video input: 75Ω
Sync input: ≥ 1 kΩ

5.6 Display performance

5.6.1 Display area

1) PRESET TIMING
MODE1, 2
WIDTH : 380mm ± 5mm
HEIGHT : 285mm ± 5mm
MODE3
WIDTH : 355mm ± 5mm
HEIGHT : 284mm ± 5mm

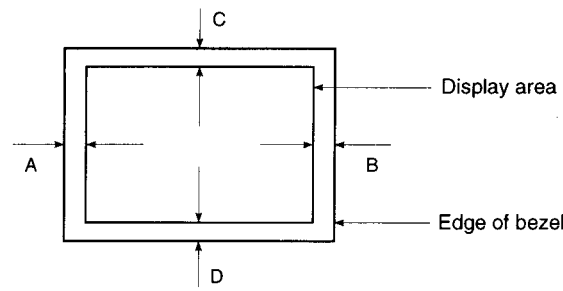
2) RESERVATION TIMING
MODE4~7
WIDTH : 380mm ± 7mm
HEIGHT : 285mm ± 7mm
MODE8
WIDTH : 355mm ± 7mm
HEIGHT : 284mm ± 7mm

3) DISPLAY AREA (Full scan)
WIDTH : 402mm
HEIGHT : 301mm

5.6.2 Centering

1) PRESET TIMING (MODE1~3)
|A – B| ≤ 4 mm
|C – D| ≤ 4 mm

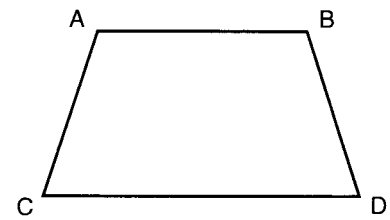
2) RESERVATION TIMING (MODE 4~8)
|A – B| ≤ 7 mm
|C – D| ≤ 7 mm



5.6.3 Distortion

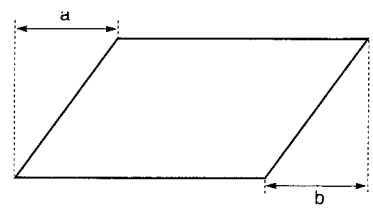
5.6.3. a) Trapezoid

|AC – BD| ≤ 3mm
|AB – CD| ≤ 4mm



b) Parallelogram

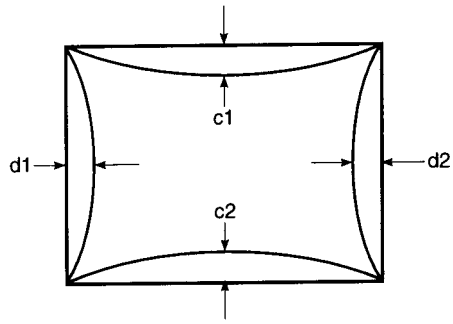
a, b ≤ 3mm



5.6.3. c Pincushion and barrel

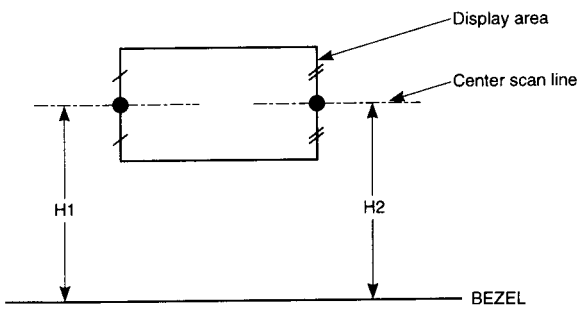
|C1|, |C2| ≤ 3.0 mm

|d1|, |d2| ≤ 3.0 mm



5.6.4 Rotation

|H1 – H2| ≤ 2.5 mm



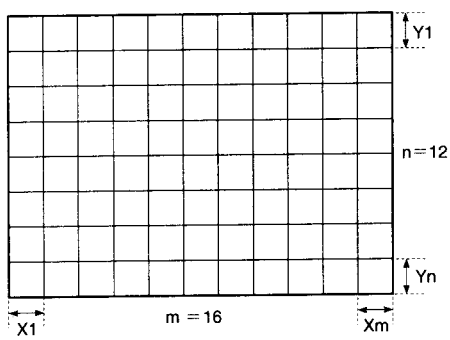
5.6.5 Linearity

Horizontal linearity

$$= \frac{X\ max. - X\ min.}{X\ max. + X\ min.} \times 100\% \leq 6\%$$

Vertical linearity

$$= \frac{Y\ max. - Y\ min.}{Y\ max. + Y\ min.} \times 100\% \leq 5\%$$



Conditions

Display image – crosshatch pattern

Maximum and minimum values should not be adjacent to each other.

X max. is maximum value among X1~Xm

X min. is minimum value among X1~Xm

Y max. is maximum value among Y1~Yn

Y min. is minimum value among Y1~Yn

5.7 General performance

5.7.1 Video output

Bandwidth	135MHz (Typ)

5.7.2 Maximum luminance

Value	100 cd/m² (min.)for 5% white field at the center of the display area. 90cd/m² (min.) for 100% white field at the center of the display area. Specified by 9300K + 27MPCD
Conditions	Luminance : Max. (Contrast : Max.) (Brightness : Center)

5.7.3 Minimum luminance

Value	≤ 17 cd/m² at the center of the display area. Specified by 9300K + 27MPCD
Conditions	Display image : White full flat field Luminance : Min. (Contrast : Min.) (Brightness : Center)

5.7.4 Brightness variation

Value	65% (Min.) Variation = C/A X 100
Conditions	Display image : White full flat field Luminance : MAX (Contrast : MAX) (Brightness : Center) A ; Luminance at center position C ; Luminance at center position of lowest brightness

5.7.5 Display area regulation

	Display area variation	Range of variation
Due to Luminance	within 1.0% of display area (white flat field)	17~100 cd/m²
Due to Power Supply	within 1.0% of display area	AC : 90 - 132V or 180 - 264V
Due to Temperature	within 1.5% of display area	0 - 40°C

5.7.6 Color Point

< Conditions >

Display image : White flat field at the center of the display area.

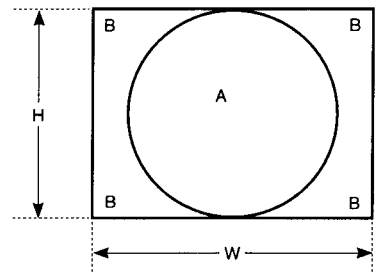
Luminance : Brightness Center.

Contrast	max	min
Value	9300K + 27 MPCD x = 0.281 ± 0.020 y = 0.311 ± 0.020	9300K + 27 MPCD x = 0.281 ± 0.020 y = 0.311 ± 0.020

5.7.7 Misconvergence

Center area of display (A) : 0.4 mm (Max.)

Corner area of display (B) : 0.45 mm (Max.)



<Conditions>

Display image : Crosshatch pattern mixed with R, G and B colors.

Convergence gauge : KLEIN CM7AG

Display image : W x H 380 x 285mm

5.7.8 Purity

Conspicuous mis-landing shall not be visible within the display area at a distance of 60cm from CRT surface.

Conditions:

Display image : White flat field

Luminance : Contrast max, Brightness Center.

5.7.9 Jitter

Invisible at a distance of 60 cm from CRT surface.

Conditions:

Display image : White flat field

Luminance : Contrast max, Brightness Center point.

6. ENVIRONMENTS

6.1 Ambient temperature, humidity and altitude

	Operating	Storage and shipment
Temperature	0°~40°C (32°~104°F)	-20°~+60°C (-4°~140°F)
Humidity	5~90%*	5~90%*
Altitude	3,000m (Max.) (10,000 ft)	12,000m (Max.) (40,000 ft)

*Non-condensation

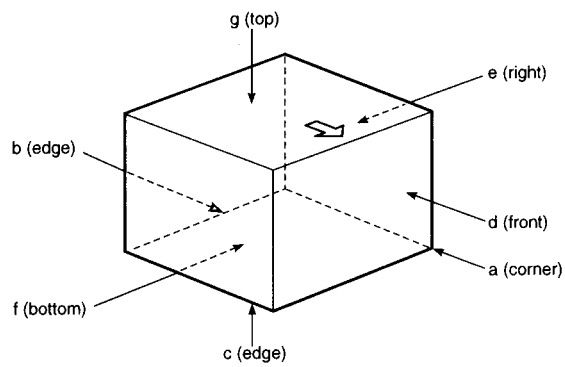
6.2 Vibration and shock

(1) Vibration

	Order of tests	Direction of vibration		Acceleration		Frequency	Sweep	Test time
				Non-operation	Storage and shipment			
Unpacked	1	Vertical	Up to down	2.9 m/s² (0.3 G)		5 - 55 Hz	120 S	30 min.
	2	Horizontal	Front to back					15 min.
	3		Right to left					
Packed	1	Vertical	Up to down		10m/s² (1.0 G)	5 - 50 Hz	Logsweep 810 S	40 min.
	2	Horizontal	Front to back		5 m/s² (0.5 G)			20 min.
	3		Right to left					

(2) Shock (Drop test)

Unpacked	20 G One time for each face (6 faces) (non-operation)			
Packed	Order of drop	Face to drop is to face the floor. (see the figure)	Height	Number of drop
	1	a, b, c, d, e, g,	35 cm	1 time for each
	2	f	50 cm	



7. REGULATORY STANDARDS

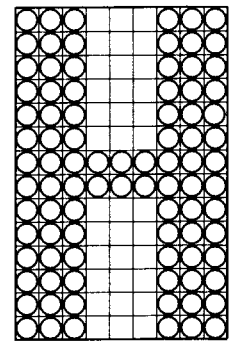
7.1 Safety standards, Applicable standards

UL 1950, Listing
CAS 22.2 No. 950, Products Certification
TüV (IEC-950)/GS (ZH1)
DHHS, 21 CFR subchapter J, X-Ray Radiation
PTB, X-Ray Radiation, Approval
HWC

7.2 EMC standards

Designed to meet following standards
VCC I class II
FCC: FCC part 15, subpart B, class-B
VDE 0878/06.83
Vfg 243/1991
CISPR22 class B
MPR-II Radiation

<EMI test pattern>
White, full "H" characters (9 x 14 dots), block (12 x 24 dots) "H" character font is as follows:



8. COLOR CRT DEFECTIVE STANDARD

8.1 Specification of screen blemishes

This instruction is applied to inspection of the screen faults and of the glass quality of the faceplate.

8.2 Test procedure

8.2.1 Tests are to be done under the following two conditions:

a) With the white raster of 34 cd/m² (10 lux) or monochrome raster (component monochromatic raster for causing the white raster to appear) in the center of 9,300K + 27 MPCD image observed at ambient light intensity of about 10 lux during operation.

b) A flaw is observed under the light of about 200 lux when the set is not in operation.

8.2.2 Viewing distance should be 60 cm (23.62") minimum. Faults not visible at this viewing distance are permitted.

8.2.3 The Following quality areas are specified:

Zone A: A rectangular area (sides X and Y)
Of which the point of intersection.
Of the diagonals coincides with the mechanical center of the screen.

	Screen size	
	X	Y
Zone A	366mm (14.4")	275mm (10.8")

Zone B: The remaining screen area except zone A.

8.2.4 Remarks concerning faults:

a) Unless otherwise specified, the size of a fault is the smallest value found with one of the two formulas:

$$\frac{a+b}{a} \text{ or } \frac{a}{20} + 2b \text{ (a = length, b = width)}$$

b) The dot signal end clogging area defined as not being a chipping in excess of 1/2.

8.3 Permissible limit

8.3.1 Screen faults

(1) Missing phosphor dots

Type of Flaw			Tolerable Quantity		Minimum Distance (mm)
			Zone A	Zone B	
1 trio			1	2	20
2 adjacent dots (same color)			0	1	20
2 adjacent dots (each color)			1	1	20
1 dot	Green phosphor dot		3	2	20
	Yellow phosphor dot		5	4	
	Red phosphor dot		5	4	
Deformation, blemishes, and other faults	Average diameter (mm)	0.51 - 0.75	0	1	20
		0.11 - 0.50	1	1	

8.3.2 Glass faceplate defects

(1) Air bubbles, spot, stains and elongated air bubbles.

Average Diameter (mm)	No. of Allowable Faults			Minimum Distance (mm)
	Zone A	Zone B	A + B	
0.76 -	0	0	0	30
0.51 - 0.75	0	1	1	
0.26 - 0.50	2	3	5	
0.11 - 0.25	—	—	—	Not more than 5 dots must not exist within a diameter of 10mm.

Scratches (Glass and Coating)

Width	Zone A + B	Total of One Product	Minimum Mutual Distance between Flaws
More than 0.16 mm	Must not exist.	—	—
0.11 - 0.15 mm	13 mm long or less	65 mm	33 mm
0.06 - 0.10 mm	26 mm or less	65 mm	17 mm
Less than 0.05 mm	No limit to length	No limit	4 mm

(2) Other defects not stated above such as chips, cracks, bruises, shear marks, clouds and polished patterns are not allowed when they substantially spoil appearance viewed from the viewing distance.

8.4 AR coating flaw standard

8.4.1 Test procedure

(1) External quality (appearance):

Place a bulb on the inspection bench and throw a white fluorescent light over it. The face glass surface light intensity shall be 1,000 lux to 1,500 lux in this case.

(2) Observing distance:

Observation shall be made at a 40 cm distance. Flaws invisible at this distance should be ignored.

(3) Zone classification:

Zone A: The inner area of a rectangle with horizontal dimension of 320 mm and vertical dimension of 240 mm with the image center taken as its center.

Zone B: The inner area on the fluorescent surface end outside Zone A.

Zone C: The area outside the fluorescent surface end.

(4) Flaw size:

The smaller of the two below shall be taken.

$\frac{\ell + b}{2}$, $\frac{\ell}{20} + 2b$ (ℓ = length, b = width)

8.4.2 Flaw criteria

(1) Scratches

Width (mm)	Maximum Allowable length (mm)
< 0.05	Permitted
0.06 - 0.10	26.0
0.11 - 0.15	13.0
> 0.16	Rejected

* A scratch in excess of 0.16 mm in width is taken as a blemish if its contrast is extremely low. The standard given in (2) applies in this case.

(2) Opaque Flaws Such as Stain and Coating Peel-off

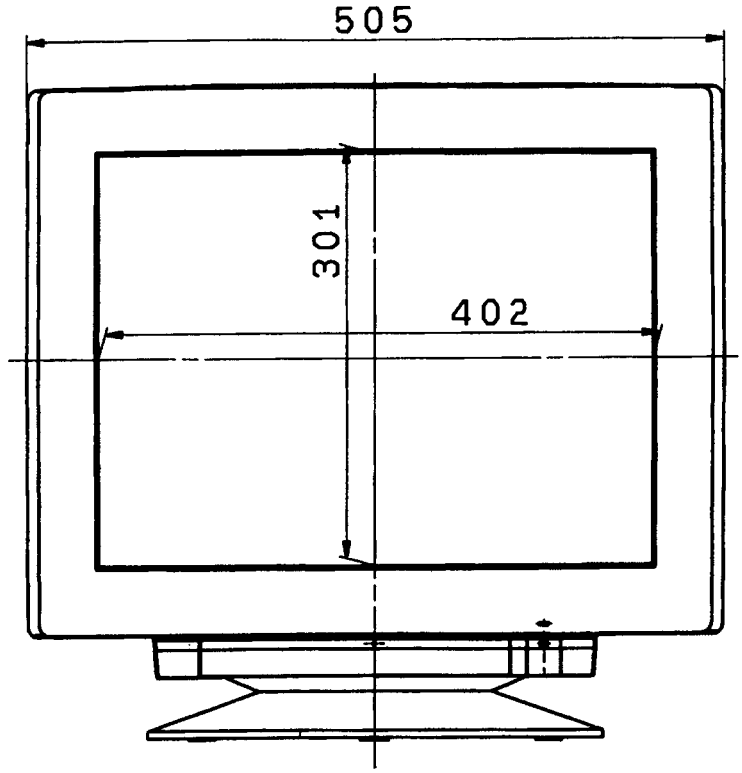
Flaws are classified according to the contrast, and judgment is formed based on the size for each contrast.

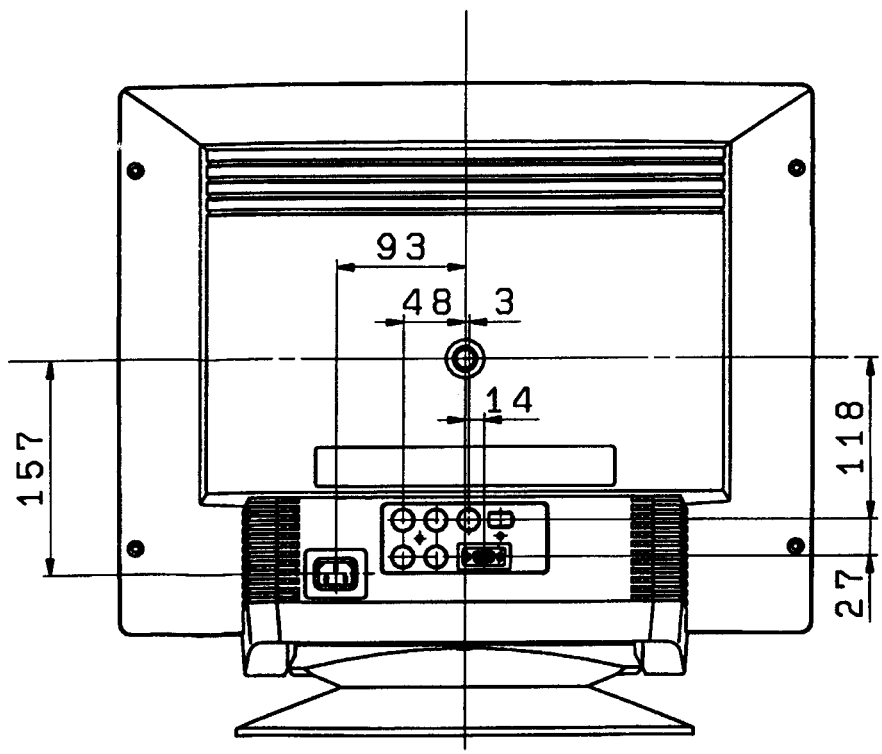
The contract classification is defined as below.

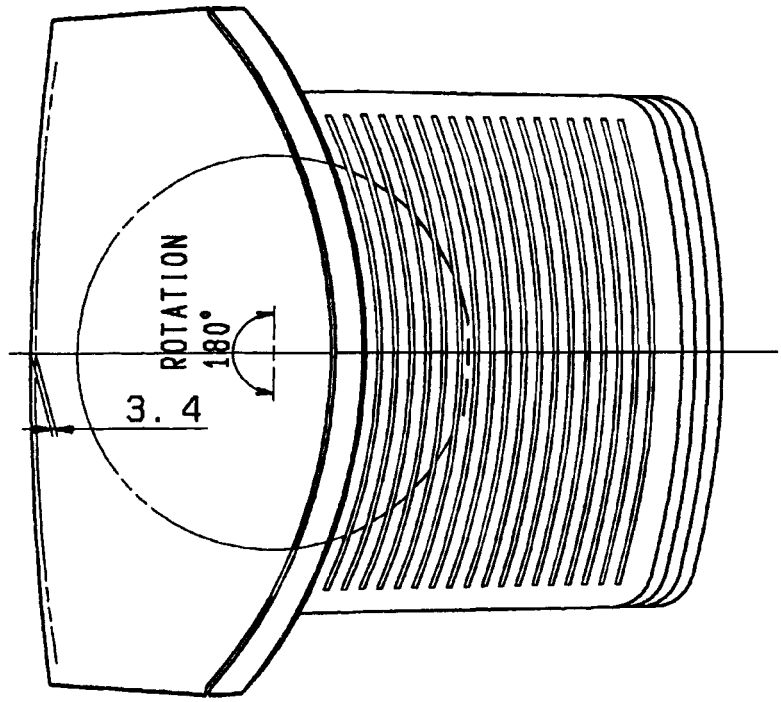
- High contrast:
  Foreign matters such as graphite and dirt which obstruct the light from the fluorescent surface, and coating peel-off.
- Medium contrast:
  Semi-transparent foreign matters and blemishes.
- Low contrast:
  The light from the fluorescent surface little differs, but slight blemish and other flaws which cannot be visually identified.

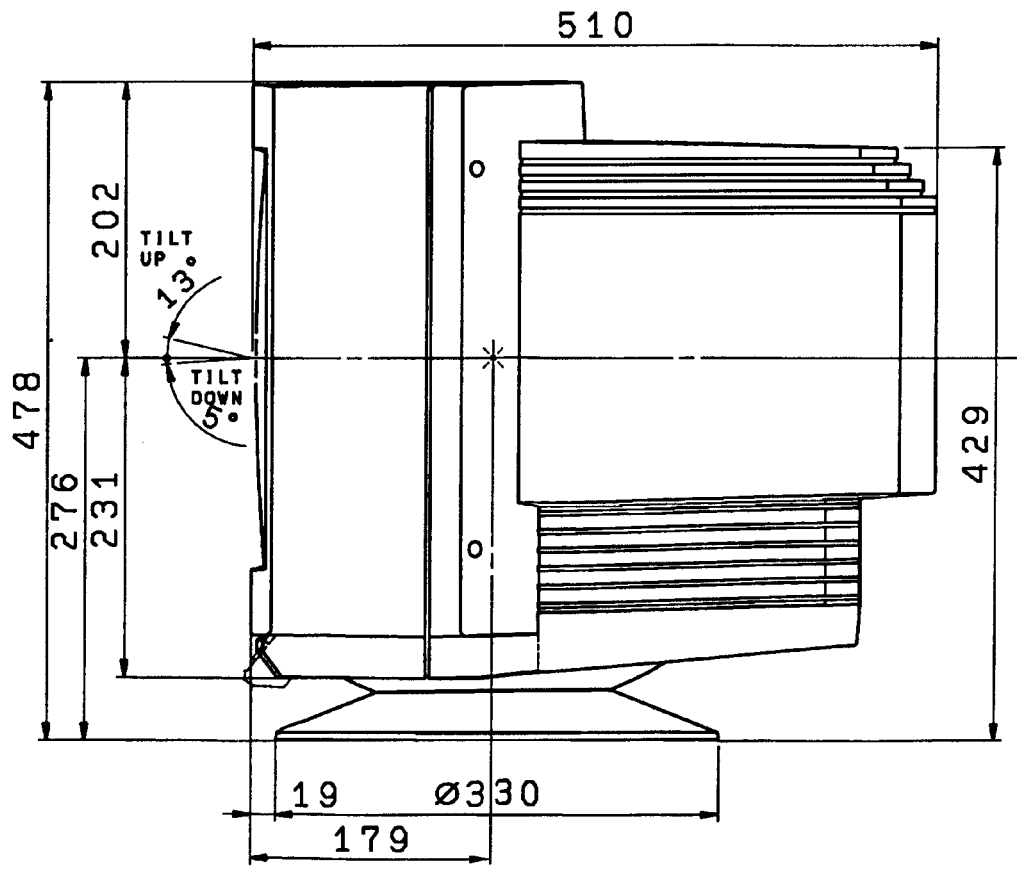
Average Diameter by Contrast (mm)			No. of Tolerable Quantity by Zone		Tolerable Distance (mm)
High Contrast	Medium Contrast	Low Contrast	Zone A	Zone B	
Below 0.10	Below 0.20	Below 0.50	(Judgment is not formed on the basis of quantity, but dots shall be less than five within a circle of 10 mm in diameter.		Blemishes must not be concentrate-ed.
0.11 - 0.25	0.21 - 0.50	0.51 - 2.50	2	4	20
0.26 - 0.50	0.51 - 1.00	1.26 - 2.50	1	2	40
0.51 - 0.75	1.01 - 1.50	2.51 - 3.75	0	1	80

DIMENSIONS






ROTATION
180°
3.4

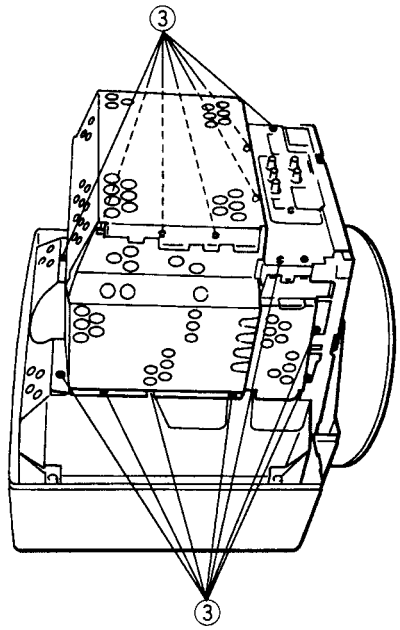

510
202
TILT
UP
13°
TILT
DOWN
5°
478
276
231
429
19
Ø330
179

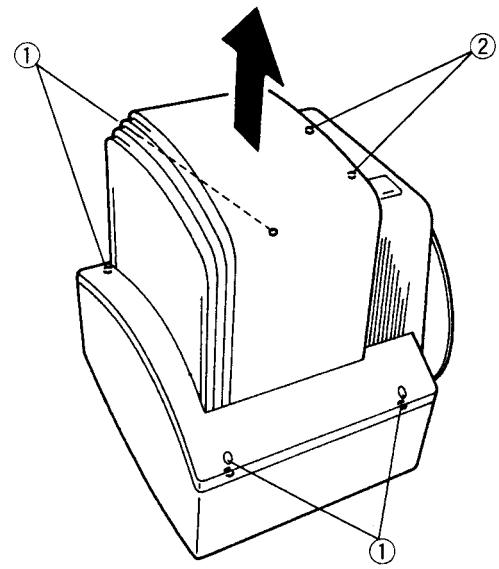
DISASSEMBLY INSTRUCTIONS

1. Rear cover removal

Note: Spread a mat underneath to avoid damaging the CRT surface.

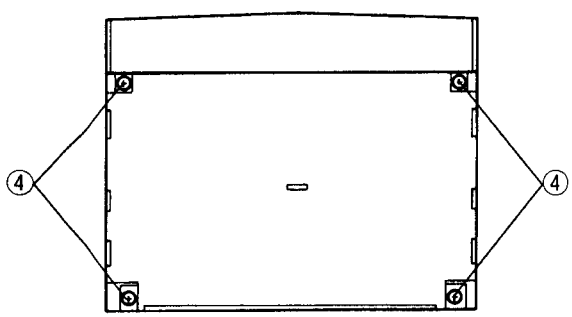
1) Remove for large screws ① and two small screws ② from the rear cover.
2) Remove the cover.
3) Remove 14 screws ③ from the shield case.
4) Remove the shield case.



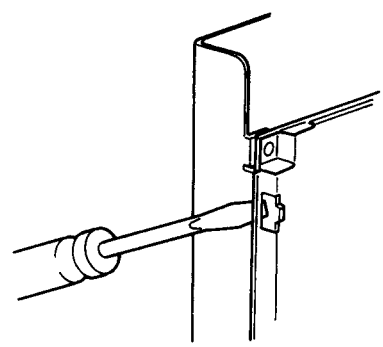


2. Video PCB removal

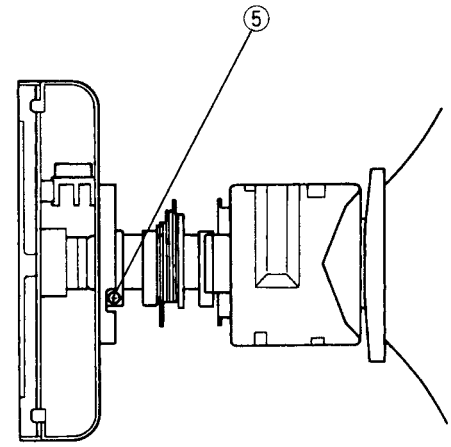
1) Remove four screws ④ securing the shield cover.
2) Remove the shield cover (A).

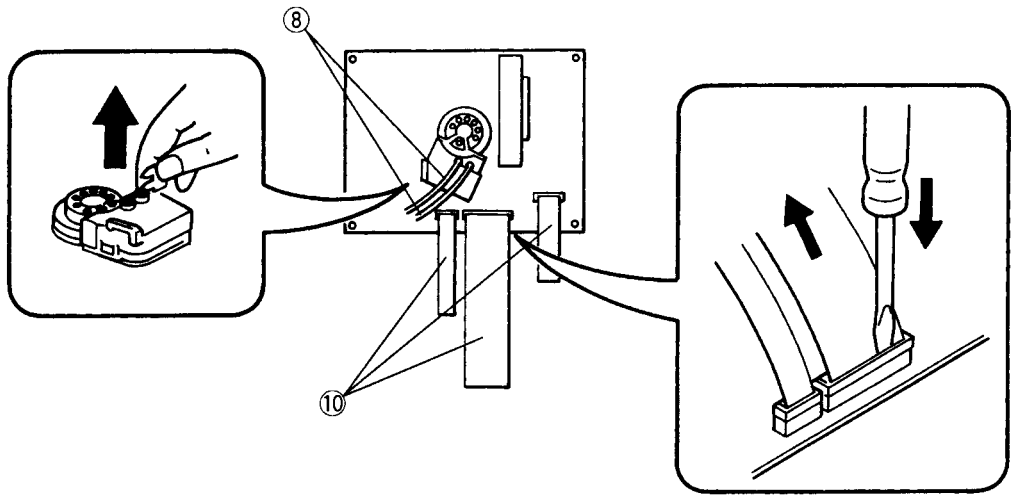


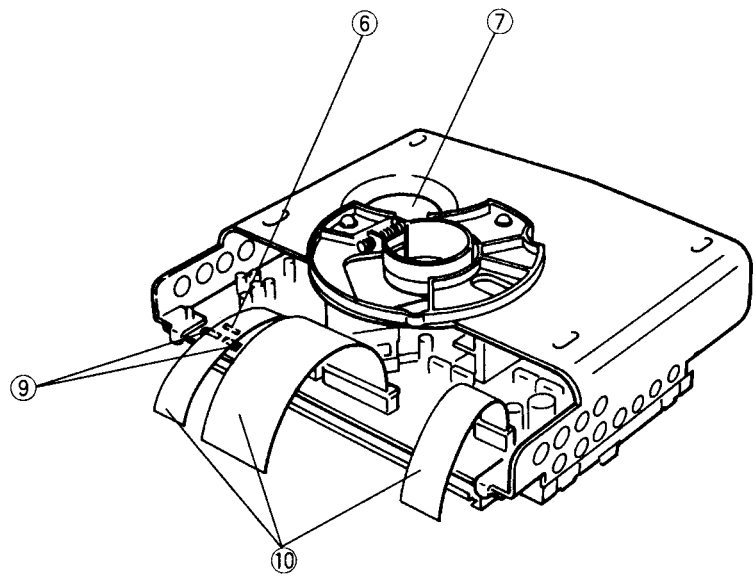
(A)



3) Loosen the screw ⑤ securing the CRT neck and the shield case.
4) Remove the PCB block from the CRT.
5) Remove the N10B connector ⑥.
6) Remove the N382B connector ⑦.
7) Remove two focus leads ⑧ after pulling up the focus lead securing lever.
8) Remove two ground connectors ⑨ (N105 and N106) connected to the PCB.
9) Remove three flexible PCBs ⑩.
10) Remove the PCB from the shield case.

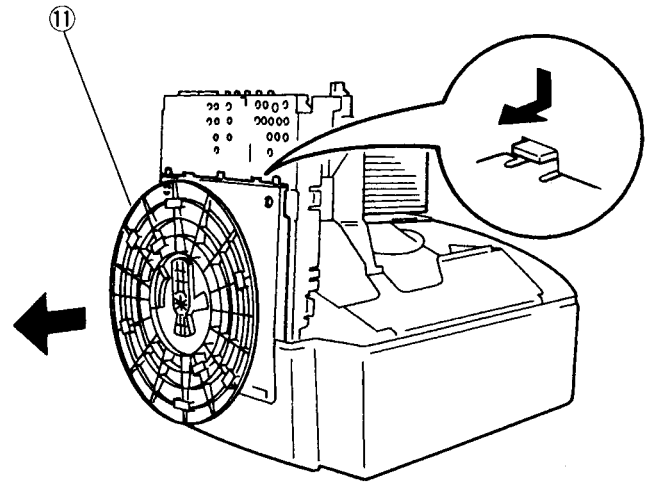


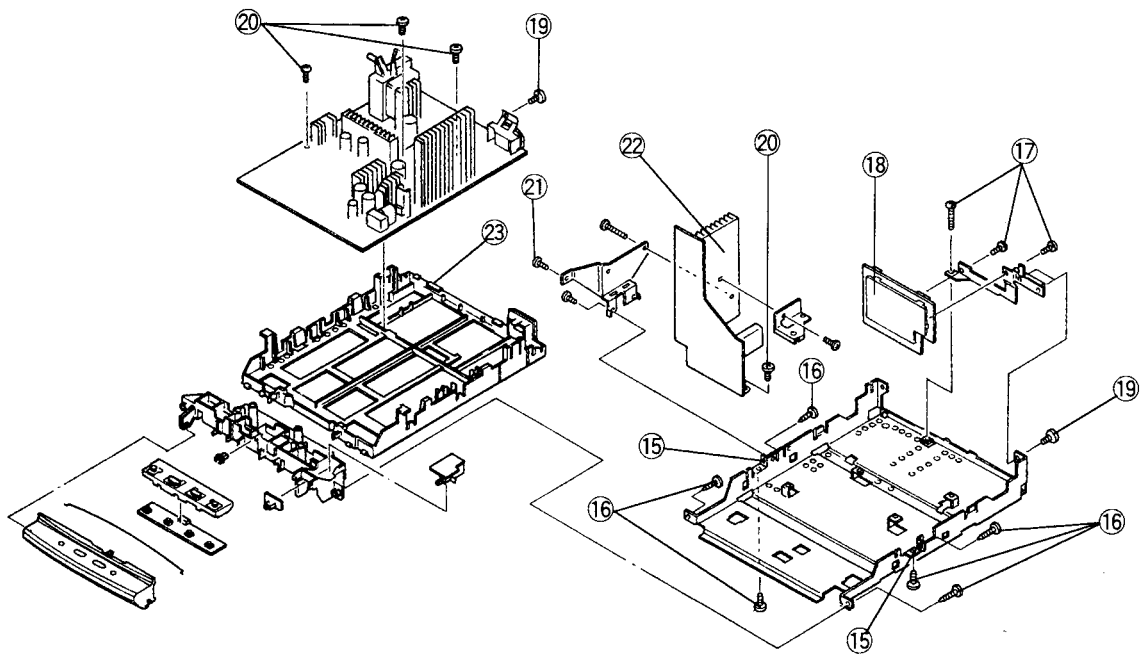


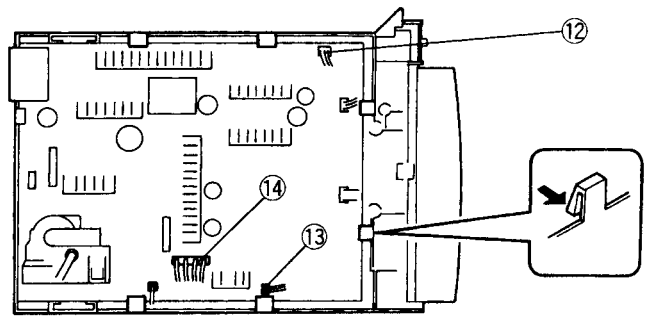


3. Main PCB Removal

1) Remove the pedestal ⑪.
2) Remove the connector ⑫ (N802) of the degauss coil.
3) Remove the connector ⑬ (N101) of the tilt coil.
4) Remove the DY connector ⑭.
5) Remove the anode cap.
6) Remove two ground connectors ⑮.
7) Remove six screws ⑯ securing the bottom fitting metal.
8) Remove the fitting metal and the PCB from the cabinet.
9) Remove three screws ⑰ securing the fitting metal.
10) Remove the signal connector PCB ⑱.
11) Remove two screws ⑲ securing the AC inlet connector.
12) Remove four screws ⑳ securing the fitting metal and PCB.
13) Remove one screw ㉑ securing the fitting metal and heat sink.
14) Remove the SUB-PCB ㉒.
15) Remove the holder ㉓ from the fitting metal and PCB with the figure referenced.



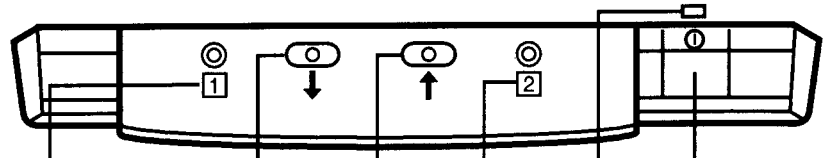




CONTROL LOCATION

Basic operation of parts

Control panel



Names of control

1 key	Down key	Up key	2 key	Pilot LED	Power switch

Functions

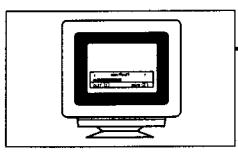
To display main menu: quit menu. Store change data in the memory.	(1)To display contrast menu; to adjust contrast. (2)To adjust level of selected item.		Selected or switch change data.	Lights when power switch is pressed; goes out when it is pressed again. Operation / Display of the Power Saving Function.	To switch on and off the display unit.

* For a detailed description of the functions of the 1 key, down key, up key, and 2 key, refer to the next section onward.

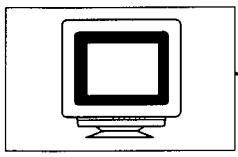
Examples of on-screen operation

A. Contrast adjustment

Display changes | Steps of operation | On-screen display changes

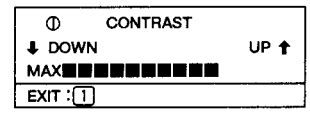


1. Display the contrast adjustment menu using the ↓ key or ↑ key.



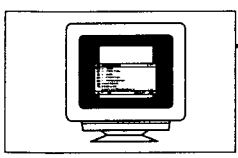
2. Set the desired state using the ↓ key or ↑ key. If the 1(EXIT) key is pressed or if no key is pressed for about 20 seconds, the set data is stored in the memory and the menu screen is cleared.

< Contrast menu >

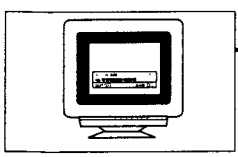


B. H. size adjustment

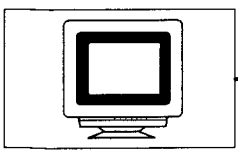
Display changes | Steps of operation | On-screen display changes



1. Call the main menu on the screen by pressing the 1 key.



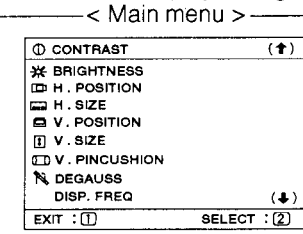
2. Move to cursor to H. SIZE using the ↓ key or ↑ key, then press the 2 key to select.



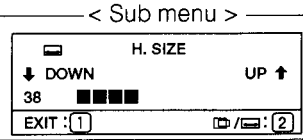
3. Set the desired state using the ↓ key or ↑ key. If the 1(EXIT) key is pressed or if no key is pressed for about 20 seconds, the set data is stored in the memory and the menu screen is cleared.

Main menu

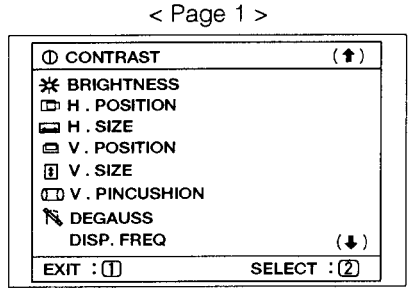
< Main menu >



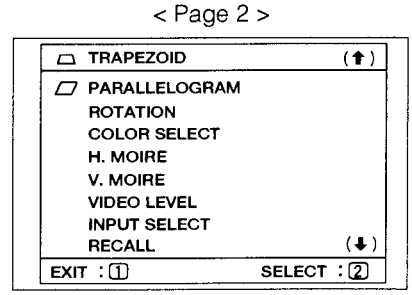
< Sub menu >



< Page 1 >



< Page 2 >



CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required at purity adjustment or convergence adjustment.
2. If you check or adjust electrical specification or function, more than 20 minutes burn-in is required.
3. Reforming of the lead wire is required after your repair work.
4. Prior to starting work, be sure to check that the input signal is at the specified timing and that the polarity is as specified in all modes.
5. Brightness control: brightness tends to decrease about 5 cd/m² at the white window and about 1 cm/m2 in the white raster after mounting the rear cover in position. This should be taken into consideration.
6. Brightness stabilizing time: It takes about 20 to 50 seconds for the brightness to stabilize after turning the power off for 5 seconds (AC). Therefore, care should be taken to this.
7. Aging should be made in white raster of 30 ~ 50 cd/m2 and raster size, 402 x 301 mm before adjusting the ITC.
8. Set the CONTRAST to MAX and BRIGHTNESS to CENTER using the O.S.D.

CAUTION FOR SERVICING

When servicing or replacing the CRT, high voltage sometimes remains on the anode. So, completely discharge high voltage before servicing or replacing the CRT so as to prevent a shock to the serviceperson.

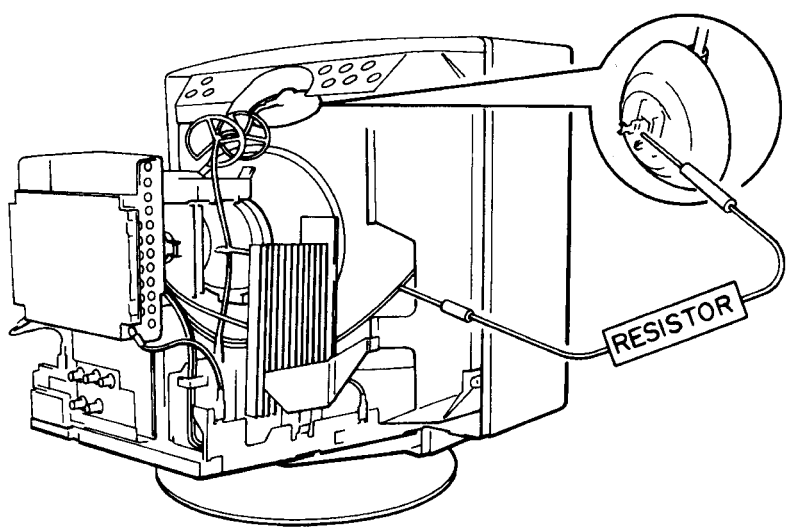
CRT Anode Discharge

1. When you check the CRT anode or replace the CRT, discharge the CRT anode to the external conductive coating (aquadag) of CRT, especially when checked right after power turn-off.
2. Ground one end of a jumper wire which has a resistor (30kV < resisting pressure 100MΩ) and connect the other point to the CRT anode.

Note: Grounding must be done first.

This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may be hit by an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.



ADJUSTMENT AND CHECK PROCEDURE

INTRODUCTION

- This monitor is controlled by a microcomputer. With the exception of purity/convergence/focus all is digitally adjusted.
  Therefore a computer, the dedicated control software, the dedicated interface, a 9~12V power supply, and a signal generator are required servicing.

TOOL REQUIRED

- **Computer**
  Control software is compatible with IBM PC.
  Therefore, it is suggested to use a computer which has compatibility with IBM PC.

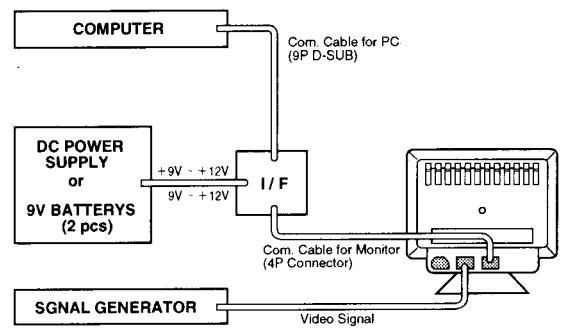
- **Control Software**
  The HV4 chassis can only use "TX-D2151 adjustment program disk". No other program can access the EEPROM on the monitor. For further information please contact to our monitor sales office.

- **Interface**
  Just as in the case of the control software, this interface is a dedicated interface. There are no substitution for this interface. For further information please contact to our monitor sales office.

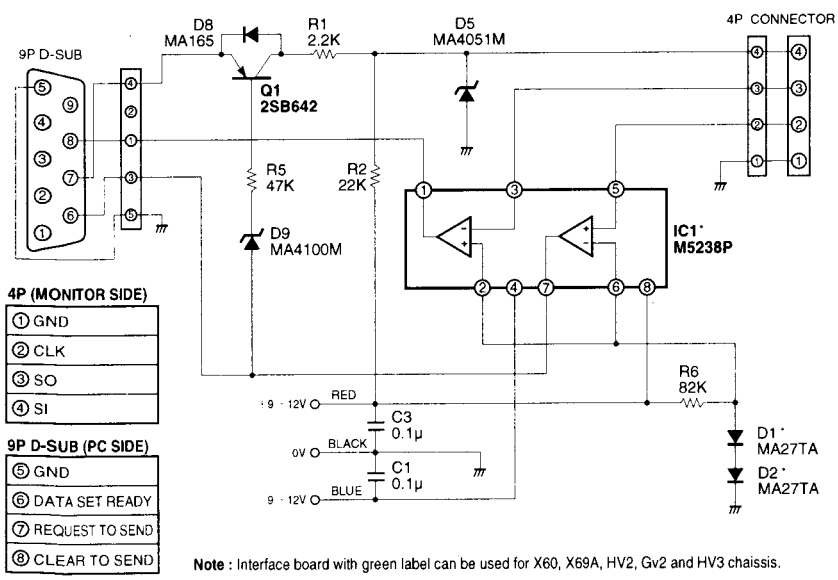
- **Power Supply**
  A DC 9~12V (+9~12V/-9~12V) power supply is required for operating the interface.

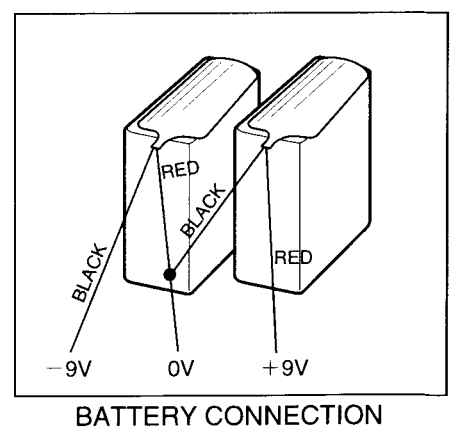
- **Signal Generator**
  It is necessary for you to use a signal generator which operates on fH 82 KHz, fv 160 Hz, and fc 135 MHz bands.

INTERFACE CONNECTION



INTERFACE SCHEMATIC DIAGRAM





BATTERY CONNECTION

Note : Interface board with green label can be used for X60, X69A, HV2, Gv2 and HV3 chaissis.

Parts No.	No. green label	with green label
IC1*	M5223	M5238P
D1*	MA162	MA27TA
D2*	MA162	MA27TA

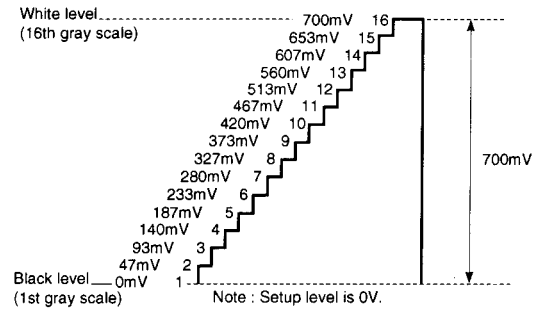
OTHER TOOLS

- Oscilloscope (dual trace)
- Scope probe – Attenuation: 100:1
  Attenuation: 10:1
- Digital Voltmeter – Range: 0 to 1000V DC
  Accuracy: 0.1%
- TV color Analyzer II – that reads luminance and chromaticity X and Y coordinates.
- Digital High Voltmeter
- AC power supply – Output voltage : 0 to 300V
- Degaussing coil
- Convergence meter
- Scale
- Double-faced scale
- Microscope – Scale factor: 50
- White racquer (Paint)

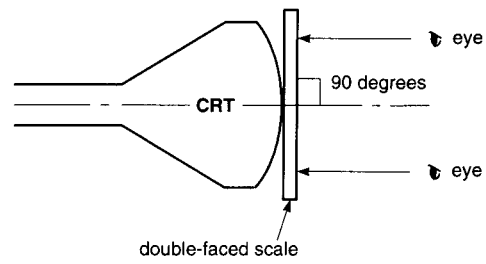
STANDARD CONDITION OF ADJUSTMENT PROCEDURE

- Signal timing : Standard timing 1024 x 768 (See page 5)
- Display pattern : White, full "H" character
- Signal level : V/H: TTL level video: 700mV
- Input source : AC 120V, 60 Hz
- Ambient temperature : Room temperature
- Warm-up time : More than 30 minutes
- Brightness control : Center
- Contrast control : Max.
- Magnetic field : Vertical: 40 μT
  Horizontal: 0 μT
- Signal cable : Attached

Video input signal from PC.



- Use a Helmholtz device to adjust an unit with no horizontal magnetic field and a vertical field of 40 μT. Inspect the unit under the same conditions.
- The ambient illuminance must be 200 lux.
- Use an external degaussing coil any time the DEGAUSS switch does not remove color shading.
- To check the image width, height, linearity and distortion, proceed as below.



Measure level with respect to tube axis.

ADJUSTMENT SOFTWARE

1. Software operating procedure

1) Power on the computer.
2) Connect the Communication cable for monitor adjustment.
3) Insert the adjustment disk into the drive.
4) At the A:> prompt type "VSR" , then press [ENTER].
5) Refer to the adjustment procedures.

2. Adjustment Program

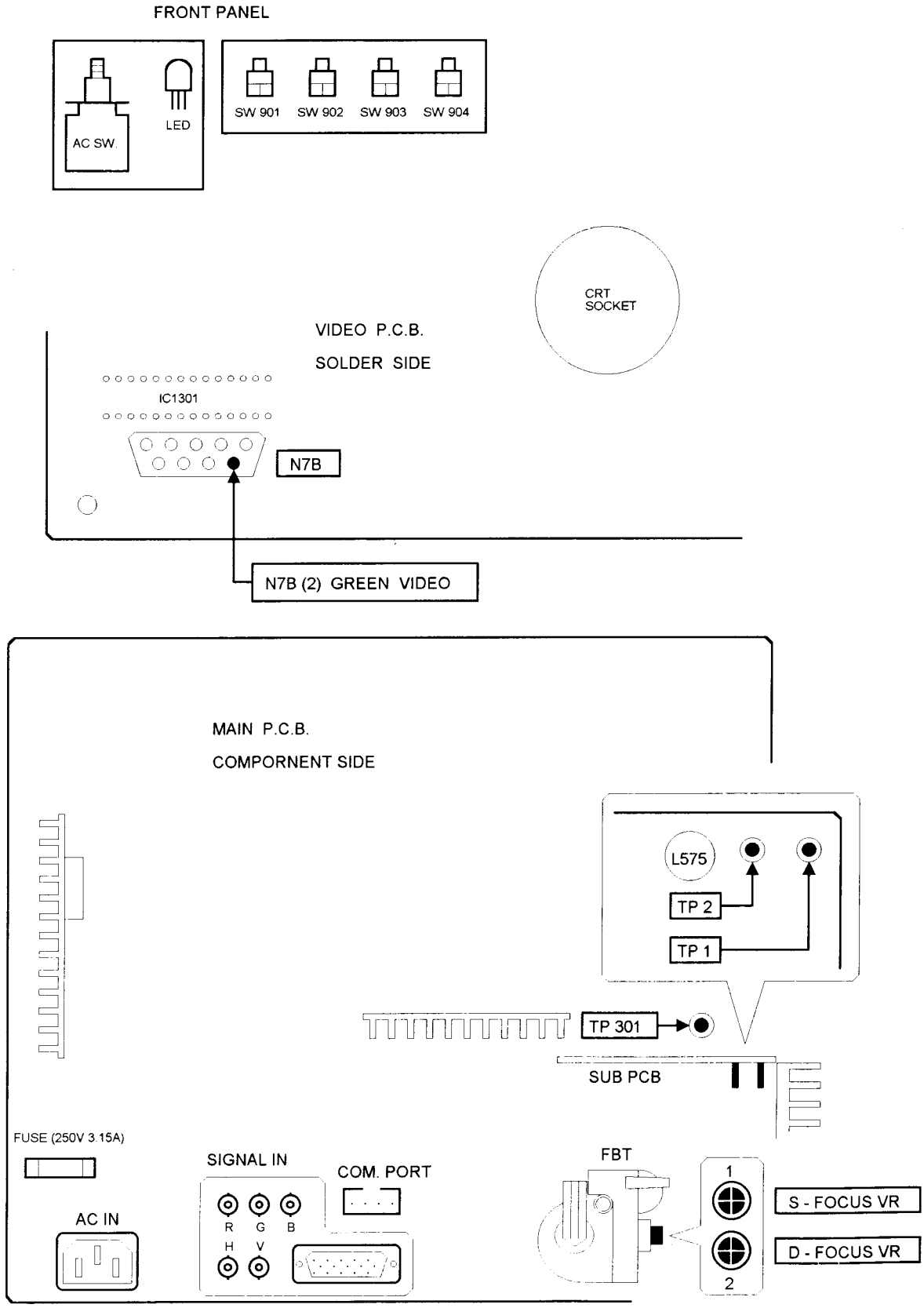
Main Menu of Adjustment Program

<<HV4 ADJUST PROGRAM MAIN MENU>> (e: exit)	<Ver *.*>
1) Load data from FILE	6) Clear User preset
2) Adjust H. OSC freerun	7) Save data to FILE
3) Adjust VSR setting	8) Special ADJUST
4) Adjust OTHER setting	9) Information Service
5) Adjust Factory preset	10) Show Version & Error

Description of Function of Each Menu

1) Load Data from File
   Transfer the contents of the data file of the disk to the monitor and update the contents of EEPROM forcedly.
   When the data of the EEPROM is damaged for some reason or other, a return to the initial state can be made easily by using the function from the original data.
2) Adjust H. OSC Freerun
   To guarantee the operation in the follow-up possible horizontal frequencies, the reference oscillation frequency can be automatically set by making the microcomputer reference it.
3) Adjust VSR Setting
   To guarantee the operation in the follow-up possible horizontal frequencies, the reference voltage to be referenced by the microcomputer and the distortion offset reference data should be set.
4) Adjust Other Setting
   This is used to control the brightness and color.
5) Adjust Factory Preset
   Makes the control at the time of preset mode, and the microcomputer is referenced when operating the partial data in modes other than the preset mode.
6) Clear User Preset
   Clear the data written in the user preset domain. Nothing is written in this domain when shipping the product from factory.
7) Save Data to File
   Transfer the data of the EEPROM of the monitor to a data file in a desired file name.
8) Information Service
   Displays the H/V frequencies of the signal fed to the monitor, and the operation status on the monitor of the PC side.
9) Show Version and Error
   ① Return the microcomputer version to the PC.
   ② If there is an error in monitor operation, the contents of that error are returned to the PC.

SERVICE ADJUSTMENT CONTROL LOCATION



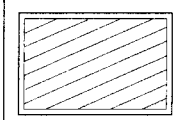
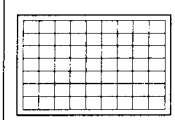
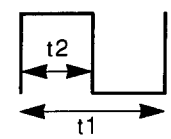
REQUIRED ADJUSTMENT PROCEDURE AFTER A PARTS IS REPLACED (✓ IS REQUIRED)

ADJUSTMENT ITEM		REPLACED PARTS															
		MAIN P.C.B.	VIDEO P.C.B.	CRT DY	IC1301 IC1302 IC1303 Q1075 Q1175 Q1275 IC1385	Q1001 Q1004 Q1005 Q1101 Q1104 Q1105 Q1201 Q1204 Q1205	IC330 IC351 Q295 Q330	IC470 IC490 Q484 Q494 Q495	IC501 IC503	IC461 IC476 Q470 Q472	IC301 IC302 Q301 Q302 Q304 Q305 Q306 Q307 Q319	IC550 IC580 IC581 Q549 Q550 Q717 Q719	Q850 Q851 Q852 Q853 Q854 Q853	IC581 Q581 Q582 Q583 Q584 Q585	IC635 IC660 Q644 Q644 Q672 Q673 Q674	Q675 Q676 Q680 Q690	IC902
(A)	DATA SETTING *	✓															✓
(B)	H. FREE RUN	✓							✓								✓
(C)	H. DRIVE DUTY	✓										✓	✓		✓	✓	✓
(D)	H. DRIVE +B	✓										✓	✓		✓	✓	✓
(DA)	EHT	✓		✓								✓	✓		✓	✓	✓
(E)	DAF	✓									✓						✓
(F)	FOCUS	✓		✓							✓						✓
(G)	H. CENTER	✓		✓										✓	✓	✓	✓
(H)	H.V. SIZE / POSI V.PCC (1)	✓		✓				✓	✓	✓		✓	✓		✓	✓	✓
(I)	V.PCC	✓		✓								✓	✓				✓
(J)	V. LIN (C)	✓		✓				✓		✓							✓
(K)	H.V. SIZE / POSI V.PCC (2)	✓		✓				✓	✓	✓		✓	✓		✓	✓	✓
(L)	H.V. SIZE / POSI V.PCC (3)	✓		✓				✓	✓	✓		✓	✓		✓	✓	✓
(M)	BRIGHTNESS, COLOR	✓	✓	✓	✓	✓	✓								✓	✓	✓
(N)	ABL	✓	✓	✓	✓	✓	✓								✓	✓	✓
(P)	INPUT 1.0V SETTING	✓	✓	✓	✓	✓	✓										✓
(Q)	H. SIZE LIMITER SETTING	✓		✓					✓			✓	✓		✓	✓	✓
(R)	FINAL SETTING	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(T)	DATA SAVING																
	PURITY & CONVERGENCE			✓													
	SCREEN CHECK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

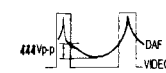
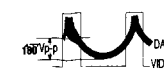
*** (A) DATA SETTING : Do not load standard data except when main P.C.B. and IC902(EEPROM) are replaced.**

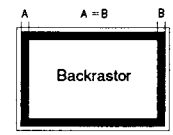
ADJUSTMENT PROCEDURE

1. Description of Adjustment Method

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
A	DATA SETTING 1) Load data from FILE		A1 A2 A3 A4	OFF	Turn the power on, but do not connect the signal cable. Press [↵] by setting the cell to the menu at left. A message FILE -> EEPROM FILE NAME (q or Q escape) [ ]: is displayed. So. key in the **DACDATA.DAT** (when using the standard data) and press [↵]. **Note:** To make the transferred data effective, turn the power of the monitor off once and turn it on once again.	
	Do not load standard data except when main P.C.B. and IC902 (EEPROM) are replaced.					
B	H. FREE RUN 2) Adjust H. OSC freerun	☐ Crosshatch	B1 B2 B3 B4 B5 B6 B7 BE	HV4S-1 HV4S-2 HV4S-4 HV4S-5	Press [↵] by setting the cell to the menu shown at left. Set the cell to the adjusting mode INTP[0] and press [↵]. Check to be sure that the input signal to the monitor set is [fH 29.5kHz] and [fV 48.0Hz] and press [↵]. When the screen image has stabilized, press [E] and return the image to the screen image of B2. <The same as B2, B3, and B4 except for the adjusting mode/signal.> Adjusting mode INTP[1]: Input signal [fH 39.0kHz] [fV 77.1Hz] Adjusting mode INTP[2]: Input signal [fH 64.5kHz] [fV 105.0Hz] Adjusting mode INTP[3]: Input signal [fH 82.5kHz] [fV 165.0Hz] Press [E] to return to the main menu.	 ↓ (Automatic adjustment) 
C	H. DRIVE DUTY 3) Adjust VSR setting	◇ Oscilloscope ▼ TP2 - GND ☐ Crosshatch Oscilloscope Range HV4-1 10 μs/div HV4-2 5 μs/div HV4-4 5 μs/div HV4-5 2 μs/div	C1 C2 C3 C4 C5 C6 C7 C8 CE	HV4S-1 HV4S-2 HV4S-4 HV4S-5	Set the cell to the menu at left and press [↵]. Set the cell to the adjusting mode INTP[0] and press [↵]. Check to be sure that the input signal to the monitor set is at given at left [fH 29.5kHz] and [fV 48.0Hz] and press [↵]. Set the cell to H. DRIVE DUTY and press [↵]. Then move the cell to the data side. Make the adjustment to match the value shown at the right using [←] and [→] keys. Make registration using [↵] after adjustment and press [E] to return to the menu of C2. <The same as C2, C3 C4, and C5 after setting the adjusting mode/signal and adjustment.> Adjusting mode INTP[1]: Input signal [fH 39.0kHz] [fV 77.0Hz] Adjusting mode INTP[2]: Input signal [fH 64.5kHz] [fV 105.0Hz] Adjusting mode INTP[3]: Input signal [fH 82.5kHz] [fV 165.0Hz] Press [E] to return to the main menu.	 t1/t2 x 100 = 53% ±2.5% 51% ±2.5% 47%±2.5% 45% ±2.5%

Note 1: Check to be sure that the program disc name is TX-D2151 before making necessary adjustment.
Note 2: Unless otherwise specified, the monitor state is as given at right.
Note 3: The underlined places indicate the adjustment items on the screen of the PC.

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
D	H. DRIVE+B 3) Adjust VSR setting	◇ Digital voltmeter ▼ TP1-GND	D1		Set the cell to the menu at left and press [↵].	
			D2		Set the cell to the adjusting mode INTP[0] and press [↵].	
			D3	HV4S-1	Check that the input signal to the monitor is [fH 29.5Hz] and [fV 48.0Hz] and press [↵].	
			D4		Set the cell to H.DRIVE +B and press [↵]. Then, move the cell to the data side.	
			D5		Make the adjustment to match the value shown at the right using [←] and [→] keys. Register with [↵] after adjustment and return to the menu of D2 using [E]. <The same as D2, D3, D4, and D5 except for the adjusting mode/signal/Adjusting value.>	20V ±0.15V
			D6	HV4S-2	Adjusting mode INTP[1]: Input signal [fH 39.0kHz] [fV 77.1Hz]	18V ±0.15V
			D7	HV4S-4	Adjusting mode INTP[2]: Input signal [fH 64.5kHz] [fV 105.0Hz]	15V ±0.15V
			D8	HV4S-5	Adjusting mode INTP[3]: Input signal [fH 82.5kHz] [fV 165.0Hz]	12V ±0.15V
			DE		Press [E] to return to the main menu.	
E	EHT ADJUST 4) Adjust OTHER setting	◇ High voltage probe and digital voltmeter ☐ RGB OFF (Sync signal only)	E1	MODE-2	Turn the power switch of the monitor OFF.	
			E2		Connect high voltage probe to anode cap and GND, then Turn the power switch of the monitor ON.	
			E3		Set the cell to the menu at left and press [↵].	
			E4		Check to be sure that the input signal is as shown at left.	27KV ± 0.3KV
			E5		Move the cell to EHT and press [↵].	
			E6		Make adjustment to as shown at right using [←] and [→].	
			EE		Register with [↵] after adjustment and return to the main menu using [E].	
F	DAF 8) Special ADJUST	◇ Oscilloscope ◇ 100:1 probe ◇ 10:1 probe ▼ TP301 - GND (100:1) ▼ N7B② (G. IN) - GND ☐ White flat field pattern Oscilloscope Range H-DAF 2 μs/div V-DAF 5 μs/div	F1		Set the cell to the menu at left and press [↵].	Waveform of E4 (H. DAF) 
			F2		Select the 2:DAF ADJUST using [↵].	
			F3	HV4S-5	Check to be sure that the signal is as shown at left.	
			F4		Adjust the time axis of the oscilloscope so that the DAF waveform becomes as shown at right.	
			F5		Move the cell to H. DAF GAIN, H. DAF POSI and adjust as shown at right using [←] and [→]. (444Vp-p ±10V)	
			F6		Adjust the time axis of the oscilloscope so that the DAF waveform becomes as shown at right.	Waveform of E6 (V. DAF) 
			F7		Move the cell to the V. DAF GAIN, V.DAF POSI and adjust as shown at right using [←] and [→]. (180Vp-p ±10V)	
			FE		Return to the menu of F2 using [E] and return to the main menu using [E] and [↵].	
G	FOCUS	☐ Crosshatch	G1	MODE-2	Turn the D FOCUS VR of the FBT to make the focus of the corner section optimum.	
			G2		Turn the S FOCUS VR of the FBT to make the focus of the center section optimum. (Repeat G1 and G2 to make it optimum.)	
		☐ Character pattern	G3		Switch to the character pattern and check to be sure that the focus is at its best. (Note: This adjustment should be done by turning the VR using a screwdriver.)	

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
H	H. CENTER 3) Adjust VSR setting	☐ RGB OFF (Sync signal only)	H1 H2 H3 H4 H5 H6 H7 H8 HE	 HV4S-1 HV4S-2 HV4S-4 HV4S-5	Set the cell to the menu at left and press [↵]. Then set the Brightness to the max. Set the cell to the adjusting mode INTP[0] and press [↵]. Check to be sure that the input signal to the monitor set is as shown at left [fH 29.5kHz] and [fV 48.0Hz] and press [↵] Set the cell to the H. CENTER and press [↵], and move the cell to the data side. Make adjustment as shown at right using [←] and [→]. Register using [↵] after adjustment, press [E], and return to the menu of H2. <The same as H2, H3, H4, and H5 except for the adjusting mode and signal.> Adjusting mode INTP[1]: Input signal [fH 39.0kHz] [fV 77.1Hz] Adjusting mode INTP[2]: Input signal [fH 64.5kHz] [fV 105.0Hz] Adjusting mode INTP[3]: Input signal [fH 82.5kHz] [fV 165.0Hz] Return to the main menu by pressing [E].	 Set the RASTER to the center with respect to the bezel.
I	HV. SIZE/HV. POSI/ V. PCC (1) 5) Adjust Factory preset	☐ Crosshatch	I1 I2 I3 I4 IE	 MODE-2	Set the cell to the menu at left and press [↵]. Check to be sure that the input signal is as shown at left and press [↵]. <Set the cell to the following items, press [↵], and make I3 and I4.> Adjust the H. SIZE, V. SIZE, H. POSI and V. POSI to the left using [←] and [→]. Set the V. PCC, V. PCC TRAPEZOID and V. PCC PARALLEL to the best using [←] and [→]. Press [E] and [N] to return to the main menu.	H. SIZE 380mm ±5mm V. SIZE 285mm ±5mm HV. POSI CENTER
J	V. PCC 3 Adjust OTHER setting	☐ Crosshatch	J1 J2 JE	MODE-2	Check to be sure that the input signal is as shown at left. Set the cell to the menu at left and press [↵]. <Set the cell to the following items , press [↵], and make necessary adjustment.> Set the V. PCC CORNER, V. PCC CENTER and V. PCC BALANCE to the best using [←] and [→]. Press [E] to return to the main menu.	
K	V. LIN (C) 8) Special ADJUST	Crosshatch	K1 K2 K3 K4 KE	 MODE-2	Set the cell to the menu at left and press the Select the 4: V.LIN(C) from the menu. Check to be sure that the input signal is as show at left. Adjust the V. LIN to the best using [←] and [→]. Return to the menu of K2 using [↵] and return to the main menu using [E].	

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
L	HV. SIZE, HV. POSI, V. PCC (2)		L1		Set the cell to the menu at left and press [↵].	
			L2		Set the cell to the adjusting mode INTP[0] and press [↵].	
		☐ Crosshatch	L3	HV4S-1	Check to be sure that the input signal to the monitor set is as shown at left [fH 29.5kHz] and [fV 48.0Hz] and press [↵].	
			L4		Set the cell to the following items, press [↵], and make necessary adjustment using the [←] and [→]. ① H. SIZE, ② V. SIZE, ③ H. POSI, ④ V. POSI, and ⑤ V. PCC	H. SIZE 380mm ±5mm V. SIZE 285mm ±5mm
	3) Adjust VSR setting		L5		After adjusting ① - ⑤, press [E] and return to the menu of L2. <Same as L2, L3, L4, and L5 except for the adjusting mode/signal.>	HV. POSI CENTER V. PCC best point
			L6	HV4S-2	Adjusting mode INTP[1]: Input signal [fH 39.0kHz] [fV 77.1Hz]	
			L7	HV4S-4	Adjusting mode INTP[2]: Input signal [fH 64.5kHz] [fV 105.0Hz]	
			L8	HV4S-5	Adjusting mode INTP[3]: Input signal [fH 82.5kHz] [fV 165.0Hz]	
			LE		Press [E] to return to the main menu.	
M	HV. SIZE, HV. POSI, V. PCC (3)		M1		Set the cell to the menu at left and press [↵].	
		☐ Crosshatch	M2	MODE-1	Check to be sure that the input signal to the monitor set is as shown at left [fH 31.5kHz] and [fV 60Hz] and press [↵].	
			M3		Set the cell to the following items, press [↵], and make adjustment as shown at right using [←] and [→]. ① H.SIZE, ② V. SIZE, ③ H. POSI, ④ V. POSI, ⑤ V. PCC, ⑥ PARALLEL and ⑦ TRAPEZOID **Note:** H. POSI and V. SIZE should use both modes, MSB and LSB.	MODE 1, 2 H. SIZE 380mm ±5mm V. SIZE 285mm ±5mm
	5) Adjust Factory preset		M4		After adjusting ① - ⑦, go to M5 using [E] and [Y]. <Same as M2, M3, and M4 except for the input signal below.>	HV. POSI CENTER V. PCC best point
			M5	MODE-2	Input signal [fH 60.0kHz] [fV 75.01Hz]	
			M6		After adjustment, go to M7 using [E] and [Y].	MODE 3 H. SIZE 355mm ±5mm V. SIZE 284mm ±5mm
			M7	MODE-3	Input signal [fH 79.9kHz] [fV 75.0Hz]	
			ME		Return to the main menu after adjustment using [E] and [N].	

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
N	BRIGHTNESS, COLOR		N1		Set the CONTRAST···MAX, BRIGHTNESS···CENTER and COLOR···9300K using the OSD.	
	4) Adjust OTHER setting		N2		Set the cell to the menu at left and press [↵].	
		☐ Sync signal only	N3	MODE-2	Feed the signal at left/pattern to the monitor.	
		(RGB OFF)	N4		Set the cell to the R. LOW LIGHT 9300K then press [↵], and move the cell to data side.	
			N5		Set the data value to "35" using [←] and [→].	
			N6		Do the same as N4 and M5 for G. LOW LIGHT 9300K.	
			N7		Do the same as N4 and M5 for B. LOW LIGHT 9300K.	
			N8		Move the cell to G2 9300K then press [↵], set the data value to "65".	
			N9		Press [→] until raster appear with any one of three colors.	
			N10		Move to LOW LIGHT 9300K of above color then set the value to "FF".	
			N11		Do the same for N9, N10 for another colors.	
			N12		Move the cell to G2 9300K of the rest of three colors and adjust until raster appear slightly.	
			N13		Adjust LOW LIGHT 9300K of above two colors (N9~N11) to the same as the N12.	
			N14		Adjust G2 9300K to the point where raster disappear.	
		☐ 16 gradation grayscale	N15		Switch over to the pattern at left and check to be sure that the 2nd gradation vaguely glitters.	
		☐ White window pattern (60 x 60mm)	N16		Switch over to the pattern at left and bring the sensor of the analyzer to the center of the screen image and set the CONTRAST...MAX.	
		◇ TV COLOR ANALYZER II	N17		Move the cell to the following items and make adjustment as shown at right using [←] and [→]. R. SUBCONT 9300K, G. SUBCONT 9300K and B. SUBCONT 9300K	Y=110 cd/m^2 ±5 x=0.281 ±0.020 y=0.311 ±0.020
			N18		Make adjustment to as shown at right using CONTRAST (Program menu on the PC)	Y=3 cd/m^2 x=0.281 ±0.020
			N19		Move the cell to the following item. Then make adjust as shown at right. R. LOW LIGHT 9300K, G. LOW LIGHT 9300K and B. LOW LIGHT 9300K	y=0.311 ±0.020
			N20		Change the following data value to the same as 9300K using [←] and [→]. G2 6550K, R. SUBCONT 6550K, G. SUBCONT 6550K and B. SUBCONT 6550K R. LOW LIGHT 6550K, G. LOW LIGHT 6550K and B. LOW LIGHT 6550K	
			N21		Press [E] to return to the main menu.	
	8) Special ADJUST		N22		Set the cell (Special ADJUST) to the menu at left and press [↵].	
			N23		Select 3: Color ADJUST from the menu.	
			N24		Automatically convert for the 6550K data when press [↵].	
			NE		Press [↵] to return to M22 menu then press [E] to return to main menu.	
O	ABL	☐ WHITE FLAT FIELD PATTERN	O1		Set the CONTRAST···MAX, BRIGHTNESS···MAX, COLOR··· 9300K using the OSD of the monitor.	
			O2		Set the cell to the menu at left and press [↵].	
		◇ TV COLOR ANALYZER II	O3	MODE-2	Feed the signal at left and bring the sensor of the analyzer to the screen image center.	
	4) Adjust OTHER setting		O4		Move the cell to ABL 9300K and adjust as shown at right.	Y=100 cd/m^2 ±10
			O5		Change the ABL 6550K data values the same as ABL 9300K using [←] and [→].	
			OE		Press [E] to return to the main menu.	

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
P	INPUT 1.0V SETTING 8) Special ADJUST	☐ White flat field pattern	P1 P2 P3 P4 P5 PE	MODE-2	Set the cell to the menu at left and press [↵]. Select 1: VIDEO 1.0V ADJUST from the menu. Set the CONTRAST MAX and VIDEO INPUT 1.0V using the OSD of the monitor set. Press [↵] against the message of "hit return key". Press [↵] as other message is displayed. Press [E] to return to the menu of P2 and return to the main menu using the [E].	
Q	H. SIZE LIMITER 8) Special ADJUST		Q1 Q2 Q3 Q4 QE	MODE-2	Set the cell to the menu item at the left and press [↵]. Check to be sure that the input signal is as show at left. Select the 5: H. SIZE LIMITER from the menu. Automatically set with selected this menu. Return to the menu of Q3 using [↵] and return to the main menu using [E].	
R	FINAL SETTING 8) Special ADJUST		R1 R2 R3 RE	MODE-2	Set the cell to the menu at left and press [↵]. Select the 9: FINAL TUNE from the menu. Press either Y or N when the message of "CANCEL USER PRESET DATA (y/n) ->" has been output after a while. Press [↵] to return to the menu of R2 and then return to the main menu using [E].	
S	DATA SAVING 7) Save data to FILE		S1 S2		Set the cell to the menu at left and press [↵]. Key in the file name after [ ]:. Use SERIAL No. as a file name. (EXAMPLE : FF4111732 = "4111732. DAT")	

2. Purity adjustment

The CRT is an ITC assembly, however, here is the explanation for readjustment just in case.

If color shading is apparent, make the following adjustment.

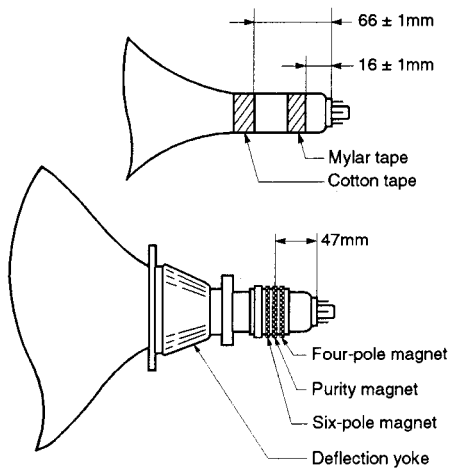
2.1.

(1) Verify that no unusual magnetic fields are near the Display unit (magnetic screwdrivers, table magnets, etc.). If possible, use a wooden workbench for this procedure.
(2) Degauss the magnetism of chassis and CRT with external degaussing coil.
(3) Adjust the purity magnet until each of the red, green and blue channels is free of color shading.

Make the following adjustment if color shading cannot be corrected by the above, or if the CRT or deflection yoke has been replaced.

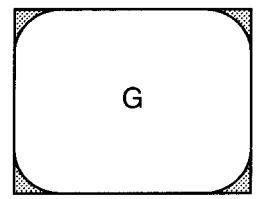
2.2.

(1) Keep the convergence yoke and deflection yoke in the positions shown below.

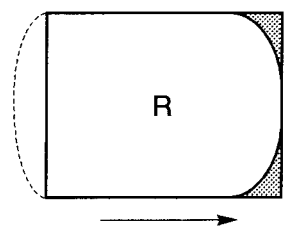


CY tightening torque: 8^{+2}_{-1} kgf·cm
DY tightening torque: 18 ±2 kgf·cm

(2) Make sure that this adjustment is done later than 30 minutes after power on.
(3) Degauss the magnetism of chassis and CRT with an external degaussing coil.
(4) Verify that static convergence is roughly matched. If it is misaligned, adjust static convergence of Red color and Blue color with Four-pole magnet .
(5) Remove the wedge from the deflection yoke, and pull the deflection yoke fully to the front.
(6) Display green color solely with the signal generator. Adjust the purity magnet so that the center of the screen displays a pure green disk. Slide the deflection yoke rearward until the four corners shaded and check its area's uniformity.



(7) After the adjustment of step 5, readjust the static convergence if some gap was found.
Static convergence alignment for this step is to be performed with Four-pole magnet and Six-pole magnet.
(8) Display red disk. Adjust the purity magnets so as that red disk is as the center of the screen simultaneously. If red is shifted, move its position in the opposite direction.



(9) Display Green again.
Slide the deflection yoke rearward until the screen appears green on the whole, and fasten it there.
(10) Confirm purity in each direction by rotating the set to direction of East, West, South, and North after degauss by external degaussing coil.
(11) If magnetism remains even after the adjustment, use the compensation magnet to obtain purity.

The final confirmation method for purity

In the natural magnetic field, rotate the monitor in the direction of East, West, South and North.

Earth's magnetic field may cause magnetism on the monitor. Confirm that the automatic degaussing circuit built in the monitor can erase the amount of magnetism which was introduced with above rotation.

3. Convergence adjustment

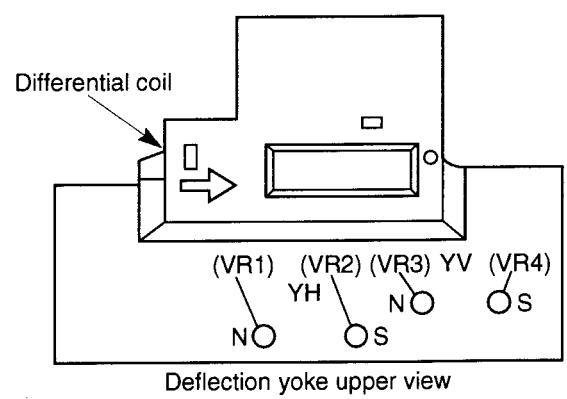
The CRT is an ITC assembly, however, here is the explanation for readjustment just in case.

(1) Make sure that this adjustment is done later than 30 minutes after power on. Check general ability coarse adjustment and purity adjustment finished.
(2) Degauss the magnetism of chassis and CRT with degaussing coil. (CRT board also)
(3) Apply mixed crosshatch signals of red and blue from the signal generator. Nudge the deflection yoke to equal its inclination up and down, right and left with a temporary wedge between CRT and the top of the yoke.
(4) Match the red and blue images at the center of the screen by rotating the Four-pole magnet (See STEP-1 in figure for examples).
(5) Apply mixed crosshatch signal of red, blue and green from the signal generator.
(6) Match the red, green and blue images at the center of the screen by rotating the Six-pole magnet. (See STEP-2 in figure for examples)
(7) Loosen the deflection yoke fastening screw and gently nudge the yoke up and down to achieve the best overall convergence on the edges of the screen (See STEP-3 in figure for examples).
Insert wedge at the top of the deflection yoke so that the convergence will not deviate due to an unsteady deflection yoke.
(8) Gently nudge the yoke from side to side to achieve the best overall convergence on the edges of the screen (See STEP-4 in figure for examples).
Insert wedges at the left side and right side of the deflection yoke so that the convergence will not deviate due to an unsteady deflection yoke. (Do not apply silicon adhesive to the wedges to prevent them from slipping out).
(9) Check that the image is horizontal.
If needed, rotate the deflection yoke.
(10) Recheck the purity adjustment. If purity was adversely affected repeat the purity adjustment, then recheck convergence when finished.
(11) Retighten the deflection yoke fastening screw. Do not overtighten the screw, as this can damage the CRT.
Tightening torque: 18 ±2 kgf·cm
(12) Align the horizontal line convergence at the center of the screen with the Differential coil (See STEP-5in figure for examples).
(13) Align the horizontal line convergence at the bottom and of the screen with the Differential resistor VR4. (See STEP-6 in figure for examples).
(14) Align the horizontal line convergence at the top of the screen with the Differential resistor VR3 (See STEP-7 in figure for examples).
(15) Align the center vertical line convergence at the top of the screen with the Vertical Isotropic Astigmatism resistor VR1 (See STEP-8 in figure for examples).
(16) Align the center vertical line convergence at the bottom of the screen with the Vertical Isotropic Astigmatism resistor VR2 (See STEP-9 in figure for examples).
(17) Recheck convergence at the center of the screen. If needed, realign with the Four-pole magnet and the Six-pole magnet.
(18) Insert wedges as shown in STEP-10 of figure (at the top, bottom, and right side of the deflection yoke). Secure them with silicon adhesive and polyester tape. Remove any temporary wedges while keeping convergence aligned.
(19) If the convergence on the fringe areas in still not acceptable, place one or more Permalloys around the funnel to achieve the best effect. Then press these Permalloys onto the funnel. Verify convergence around all edges of the screen. (See SYTEP-11 in figure for examples).

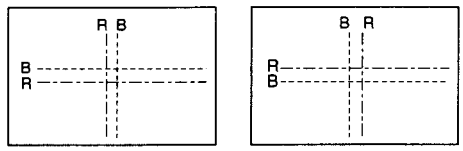
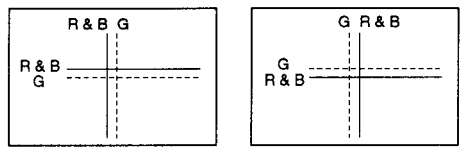
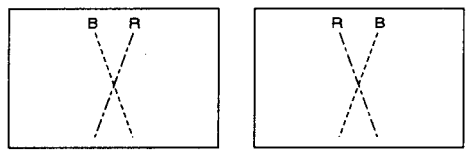
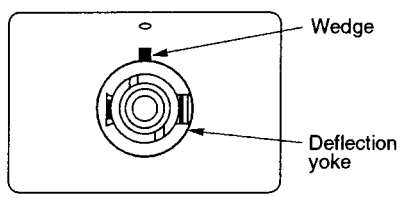
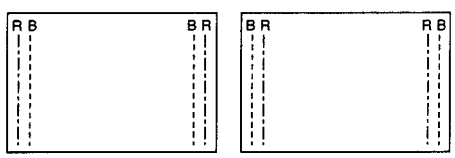
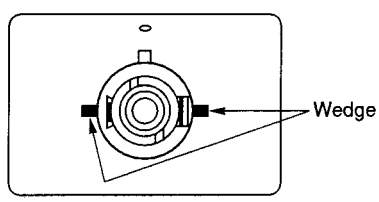
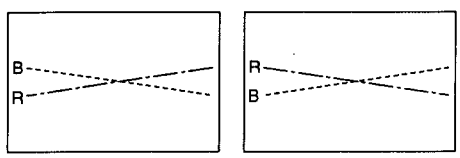
NOTE

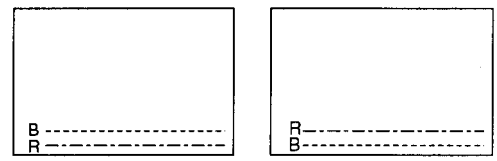
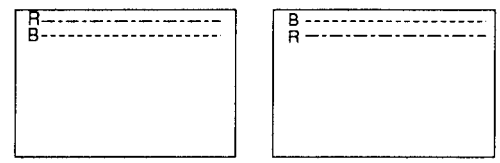
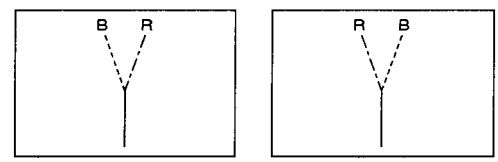
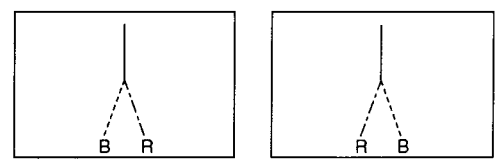
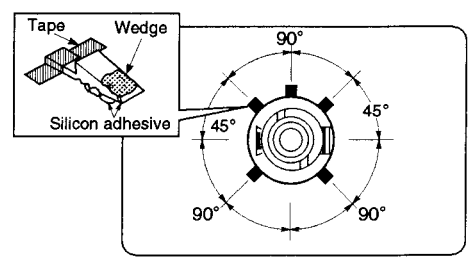
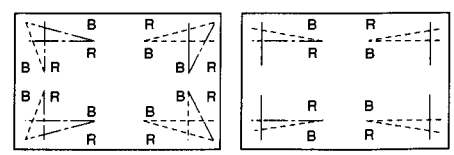
In the above step, do not place the Permalloys closer than 20 mm from the HV anode cap. Do not tape them over any paper labels or secure them with silicon adhesive.

(20) After completion of adjustment, apply locking paint to the movable portions of the deflection and convergence yokes to secure them.



Deflection yoke upper view

Adjustment part	Misconvergence pattern Wedge inserting position
Four-pole magnet B	**STEP-1** 
Six-pole magnet	**STEP-2** 
Deflection yoke	**STEP-3**  Tilting the yoke up Tilting the yoke down  Rear view of the CRT
Deflection yoke	**STEP-4**  Tilting the yoke left Tilting the yoke right  Rear view of the CRT
Differential coil	**STEP-5** 

Adjustment part	Misconvergence pattern Wedge inserting position
Differential resistor (VR4) YV (S)	**STEP-6** 
Differential resistor (VR3) YV (N)	**STEP-7** 
Vertical Isotropic Astigma-tism resistor (VR1) YH (N)	**STEP-8** 
Vertical Isotropic Astigma-tism resistor (VR2) YH (S)	**STEP-9** 
	STEP-10  Wedge spacing and how to tape
Permalloy	**STEP-11** 

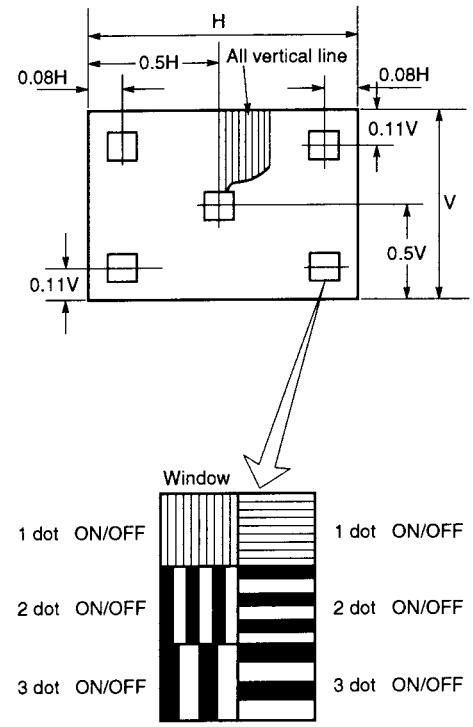
CHECK ITEM

These items are intended for a recheck after adjustment and for a check of the following function operations:

1. Resolution check
2. Brightness variation check
3. Gradation check
4. Brightness check
5. Deflection linearity check
6. Distortion check
7. Image stability check
8. Blinking image check
9. Circuit operation check
10. Specific function check
11. Power save function check

1. Resolution Check

(1) Apply resolution check pattern.



(2) Check with the normal signal and inverted signal. Check to be sure that display color between dots is uniform and that there are no color difference and spotty display color.

(3) Check the entire image quality including resolution.

2. Brightness Variation Check

(1) Cause the white full dot pattern to be displayed with the Mode-2 signal.

(2) Set the contrast to a maximum.
Set the brightness to the center.

(3) Make sure that a brightness difference between the center and periphery is <65% with the horizontal magnetic field in the condition of ±30 μT.

3. Gradation Check

(1) Cause the 16 grayscale to be displayed with the Mode-2 signal. (White gradation waves.)

(2) Set the contrast to a maximum and the brightness to the center.

(3) At this time, the 1st gradation (black level) cannot be seen and the 2nd gradation must be barely lit.

(4) With the brightness set to the center, vary the contrast from the maximum point and the gradation tracking must be good at that time.

Note: If tint (particularly the gray, which is a middle color) is different, make adjustment of the white balance once again.

(5) With the contrast set to a maximum, vary the brightness from the maximum point to the minimum point and check to be sure that the brightness of the low gradation portion changes.

Note: Check both the color select 9300K and 6550K.

4. Brightness Check

(1) Cause the white full-flat field pattern to be displayed with the Mode- 2 signal.

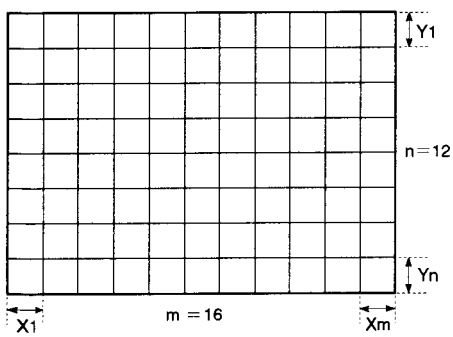
(2) Make sure that the brightness value is < 17 cd/m² when the contrast is set to a minimum and the brightness to the center.

5. Deflection Linearity Check

(1) Display the green only crosshatch pattern.

$$\text{Horizontal linearity} = \frac{X\,\text{max.} - X\,\text{min.}}{X\,\text{max.} + Y\text{min.}} \times 100\%$$

$$\text{Vertical linearity} = \frac{Y\text{max.} - Y\text{min.}}{Y\text{max.} + Y\text{min.}} \times 100\%$$



(2) To confirm the horizontal deflection linearity, proceed in the next input signal modes:

Mode-1
Mode-2 } 6%
Mode-3

To confirm the vertical deflection linearity, proceed in the following input signal modes:

6. Distortion Check

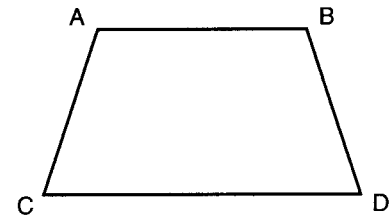
(1) Apply the signal of the following mode and supply the green crosshatch pattern.

Mode-1
Mode-2
Mode-3

(2) Make sure that each value comes within the value indicated above.

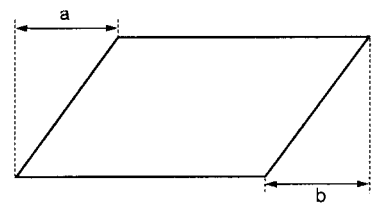
- Distortion
- Trapezoid

$|AC - BD| \leq 3mm$
$|AB - CD| \leq 4mm$



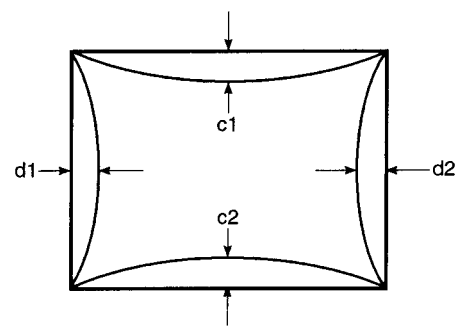
- Parallelogram

a, b ≤ 3mm



- Pincushion and barrel

$|C1|, |C2| \leq 3.0$ mm
$|d1|, |d2| \leq 3.0$ mm



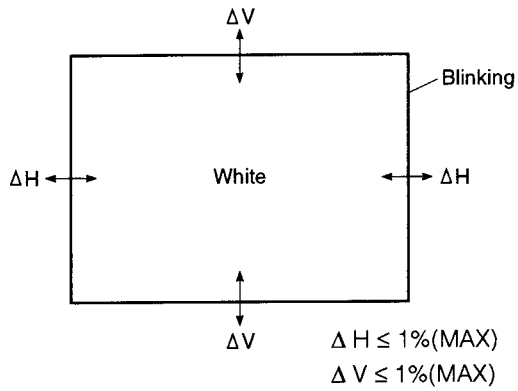
7. Image Stability Check

(1) Check to be sure that the size variations are < 2 mm for horizontal size and < 1.5 mm for vertical size when the white full dot pattern of Mode-1 is displayed and the AC voltage is changed to 90 ~ 264 V.

(2) Make sure that the size variations are < 2 mm for horizontal size and < 1.5 mm for vertical size when contrast is changed to a minimum from maximum at the AC voltage of 120 V/240V.

8. Blinking Image Check

(1) Apply blinking pattern signal. (100%)



(2) Check the image stability at Mode-1.
Check if image changes due to blinking meets the standards below using the microscope.

9. Circuit Operation Check

(1) Check the protection operation at fH not covered in the specifications.

(2) Apply fH = 28 KHz and 84KHz signal and check to be sure that sync flows.

10. Specific Function Check

(1) Create the crosshatch pattern using the Mode-2 signal of the preset timing.

(2) Vary the variations of the vertical size and the deviation of the horizontal size and check to be sure that the horizontal size and horizontal position variations meet the values given below.

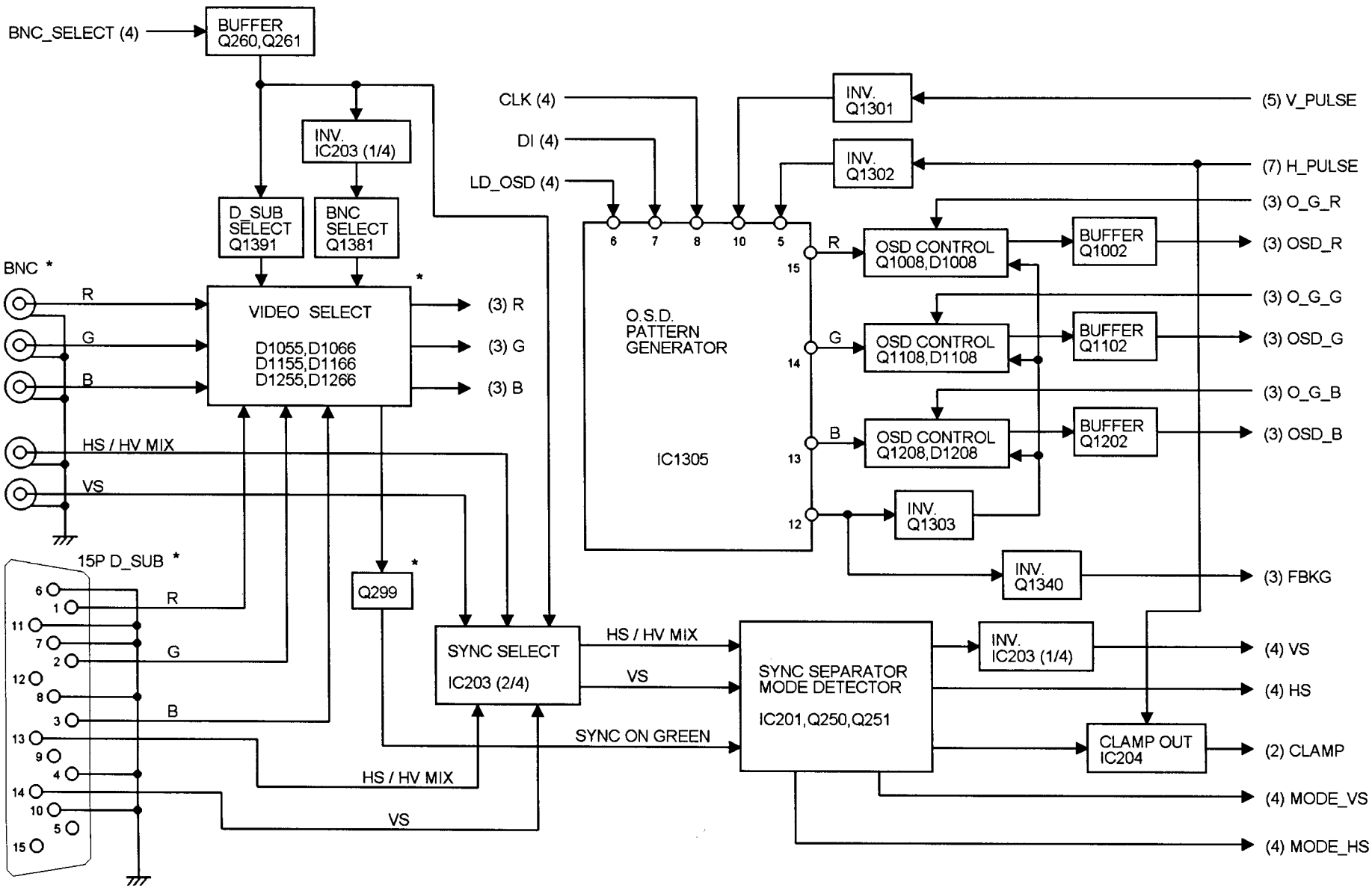
Vertical size	→ Full scan
Vertical position	→ up and down 5 mm or more
Horizontal size	→ Full scan
Horizontal position	→ left 40 mm or more
Horizontal position	→ right 40 mm or more

11. Power Save Function Check

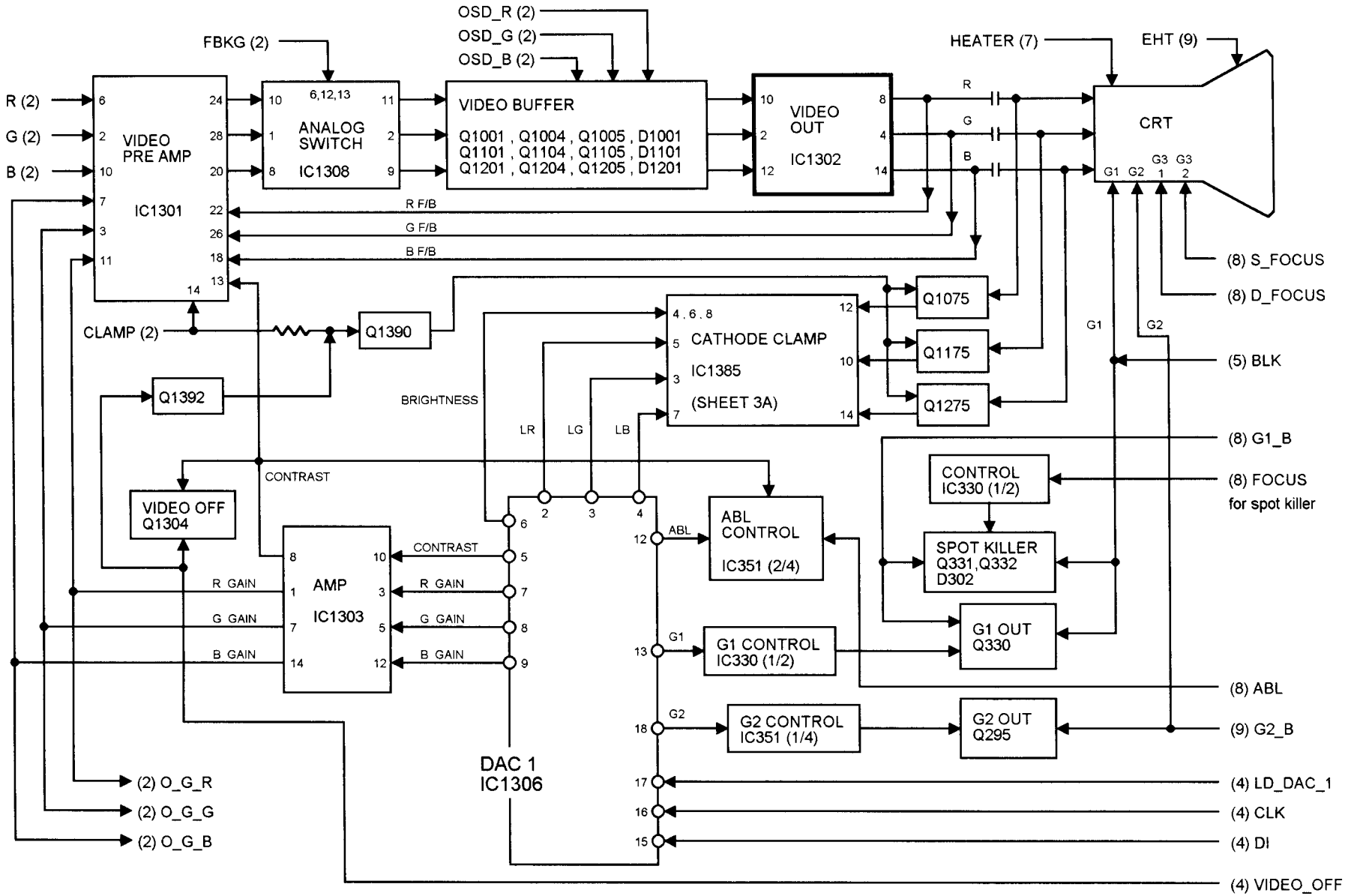
The power consumption must meet the specifications when the horizontal/vertical sync signals are changed as shown below.

H. SYNC	OFF	ON	OFF
V. SYNC	ON	OFF	OFF
SPEC	< 30W	< 30W	< 8W

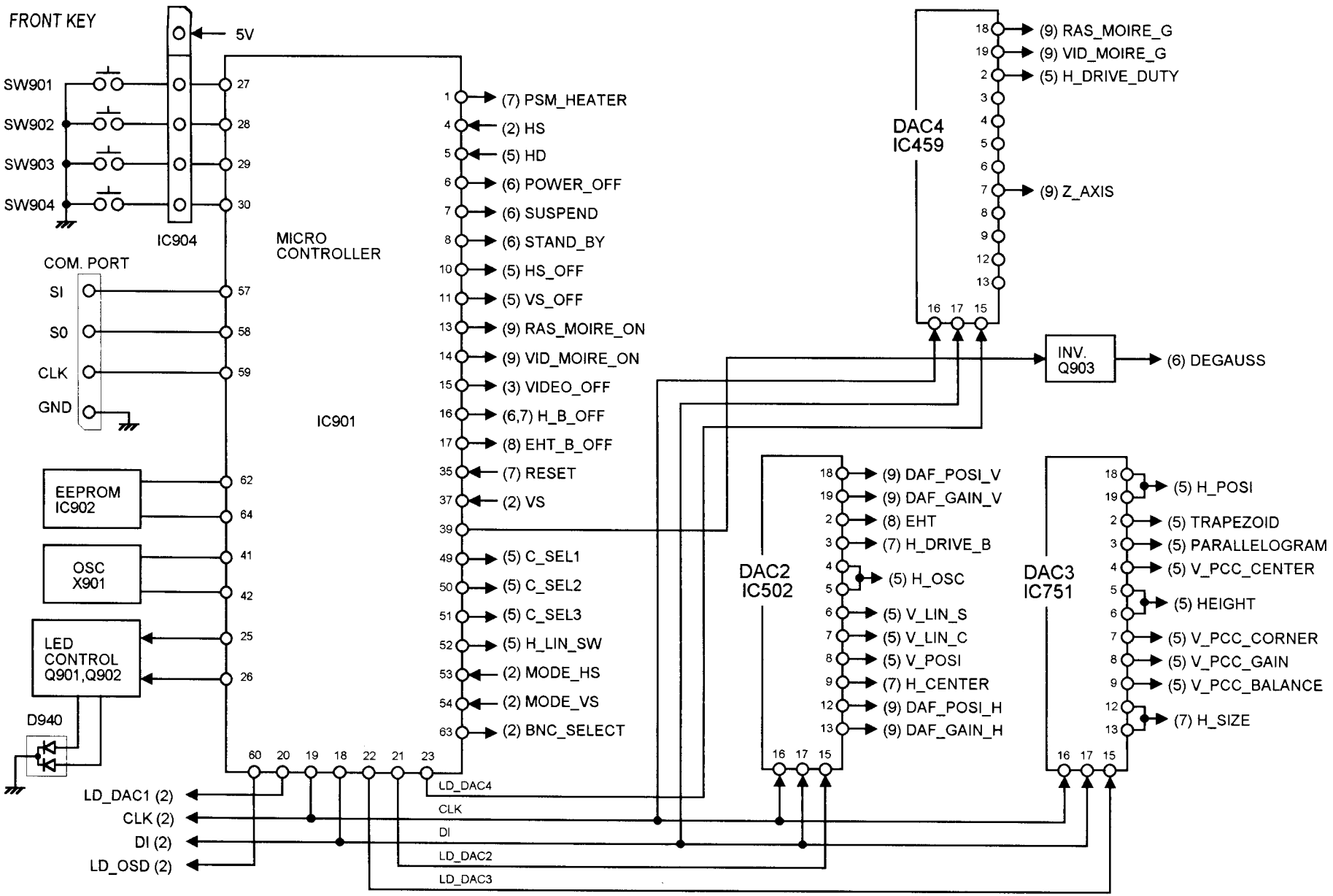
SHEET (1) SIGNAL SELECT * / SHEET (2) SYNC SEPARATE



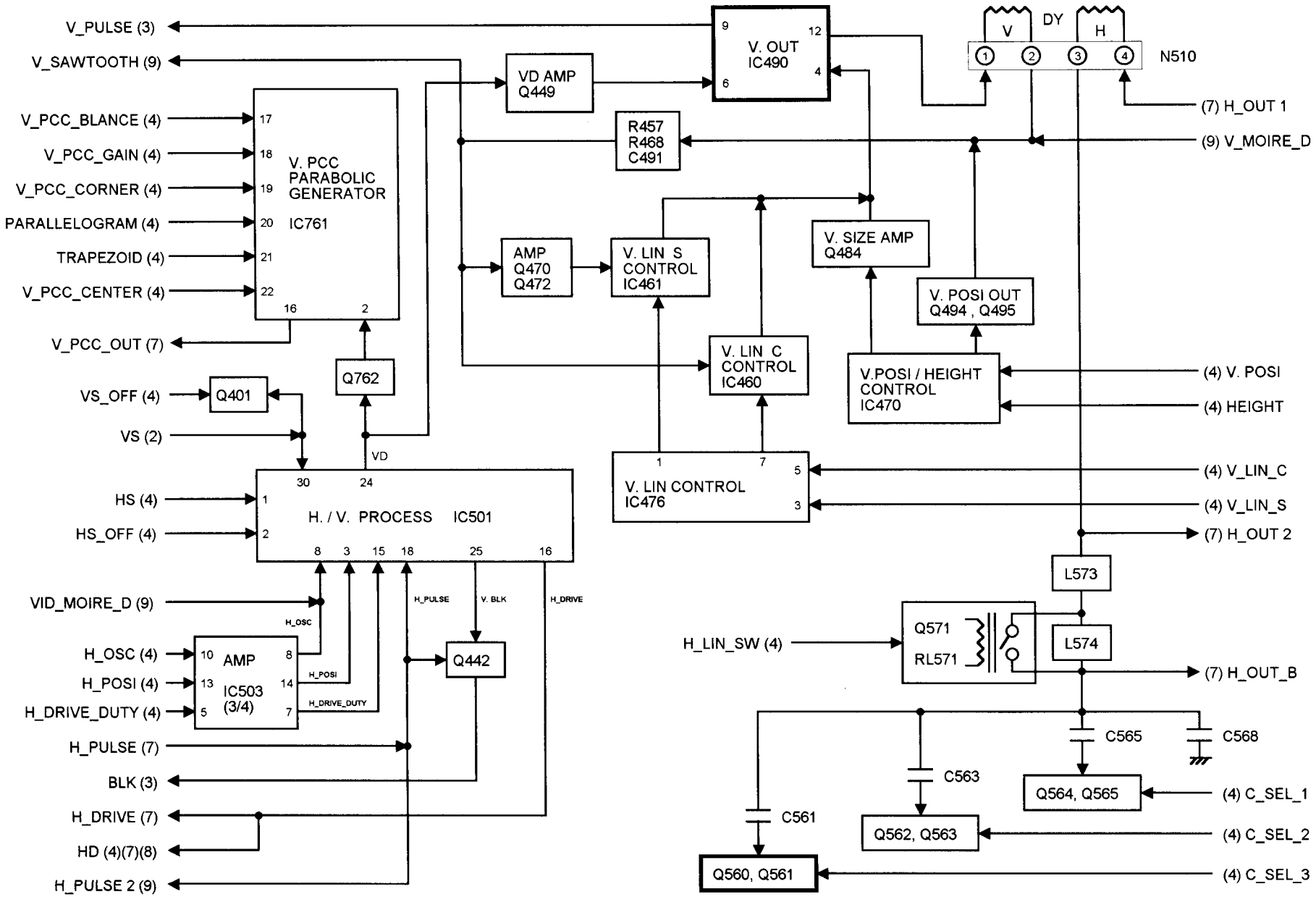
SHEET (3) VIDEO OUT / SHEET (3A) CATHODE CLAMP



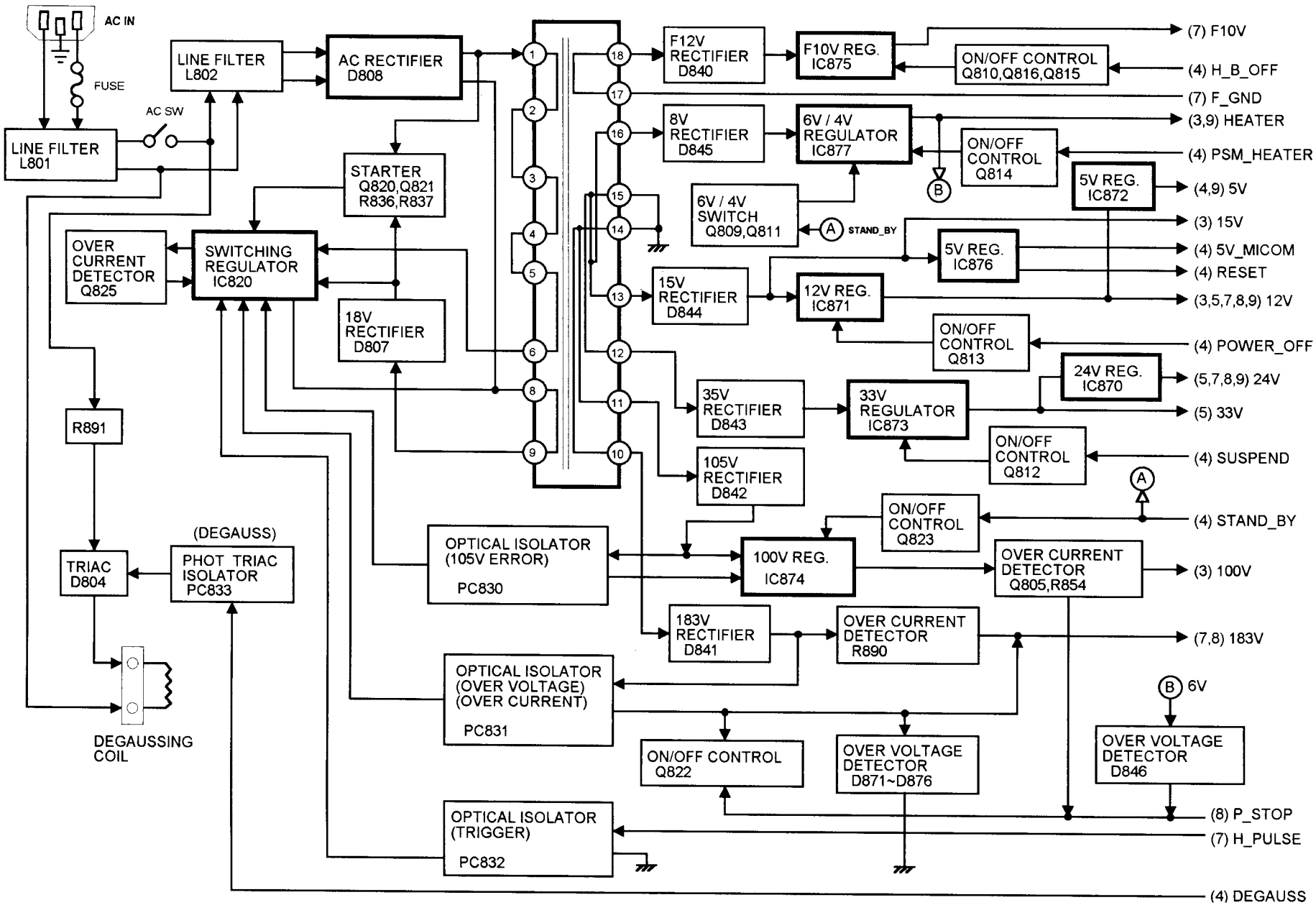
SHEET (4) MICRO CONTROLLER / DIGITAL ANALOG CONVERTER



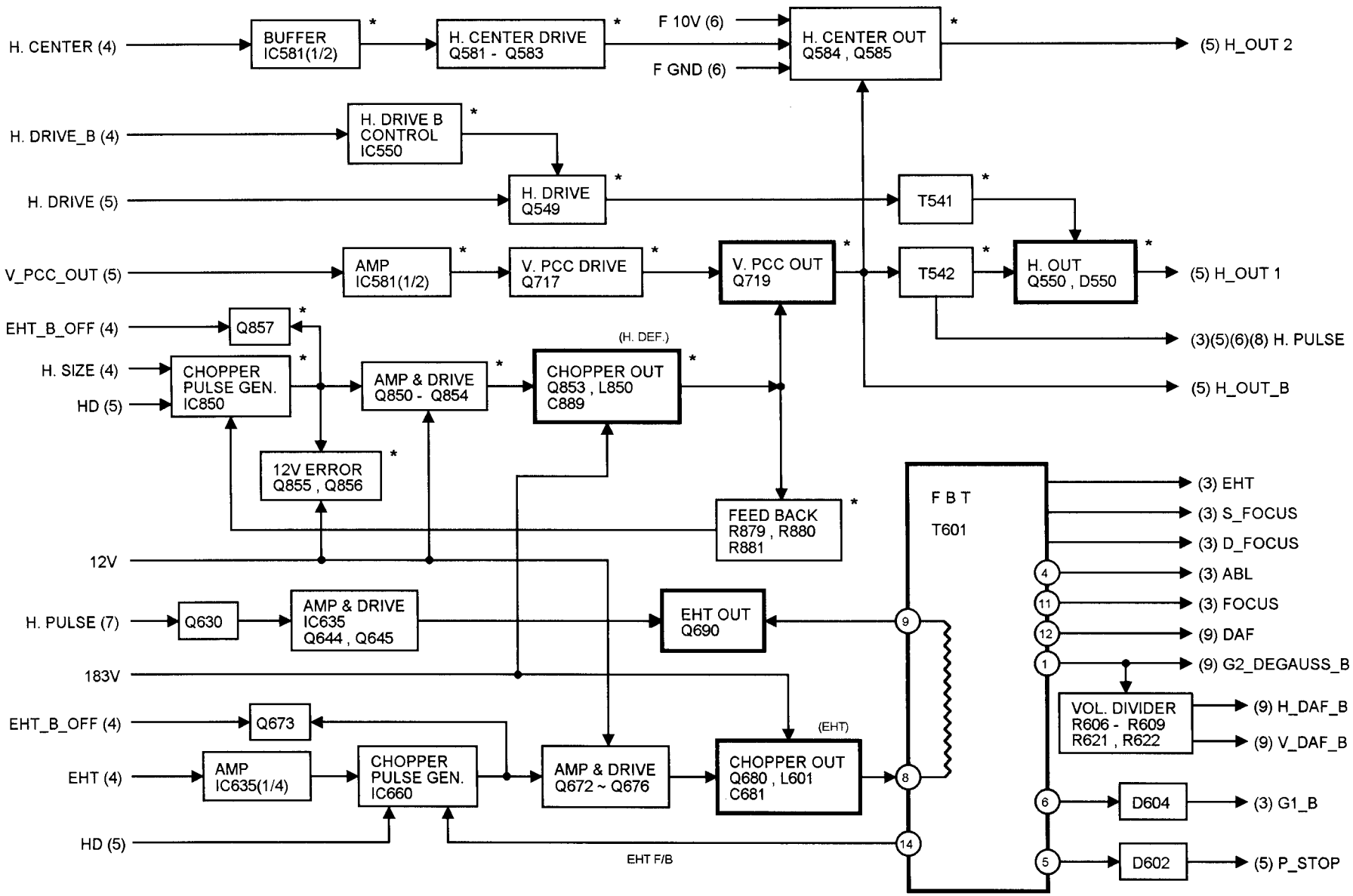
SHEET (5) V. OSC - OUT / V. PCC CONTROL / H. OSC / H. LIN CONTROL



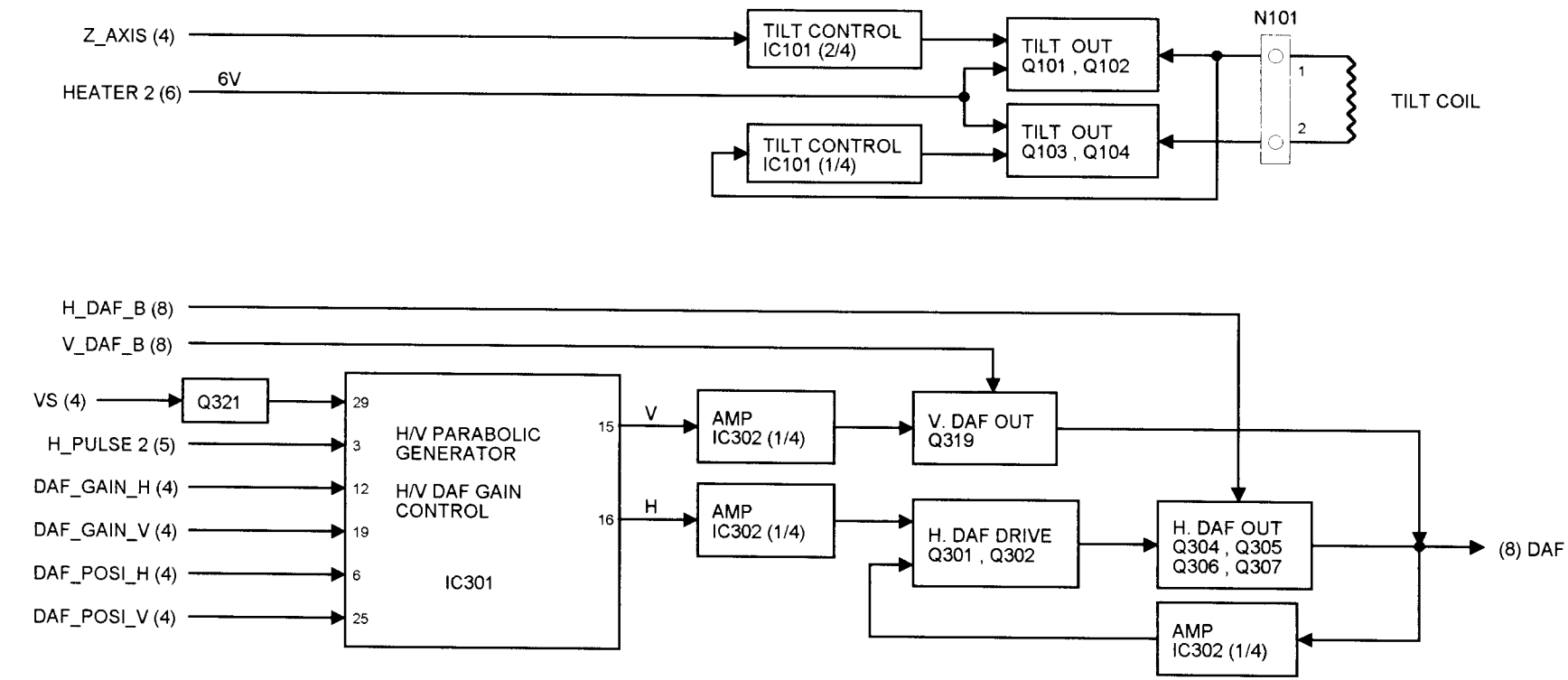
SHEET (6) POWER SUPPLY



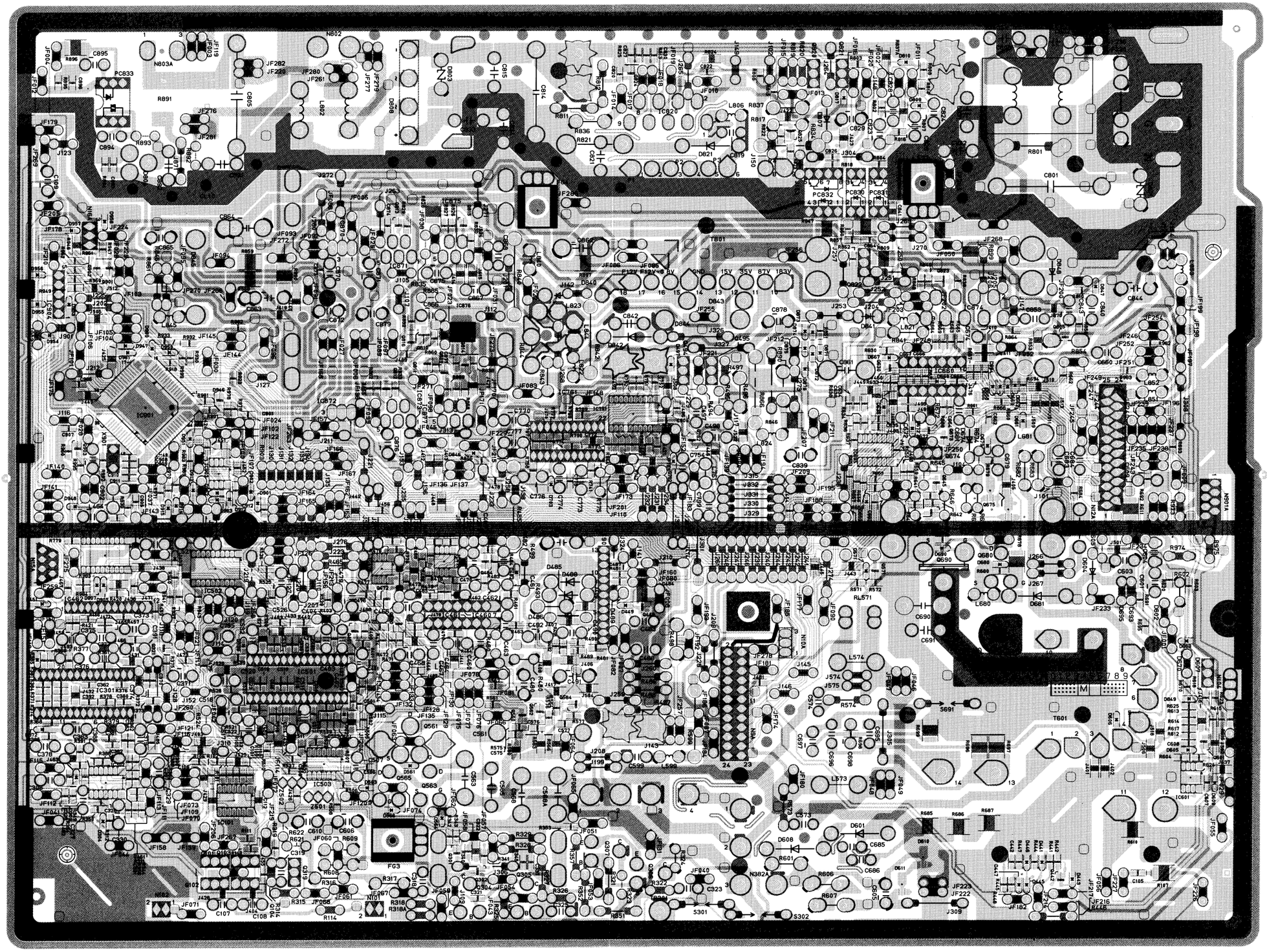
SHEET (7) HORIZONTAL DEFLECTION * / SHEET (8) EHT OUT



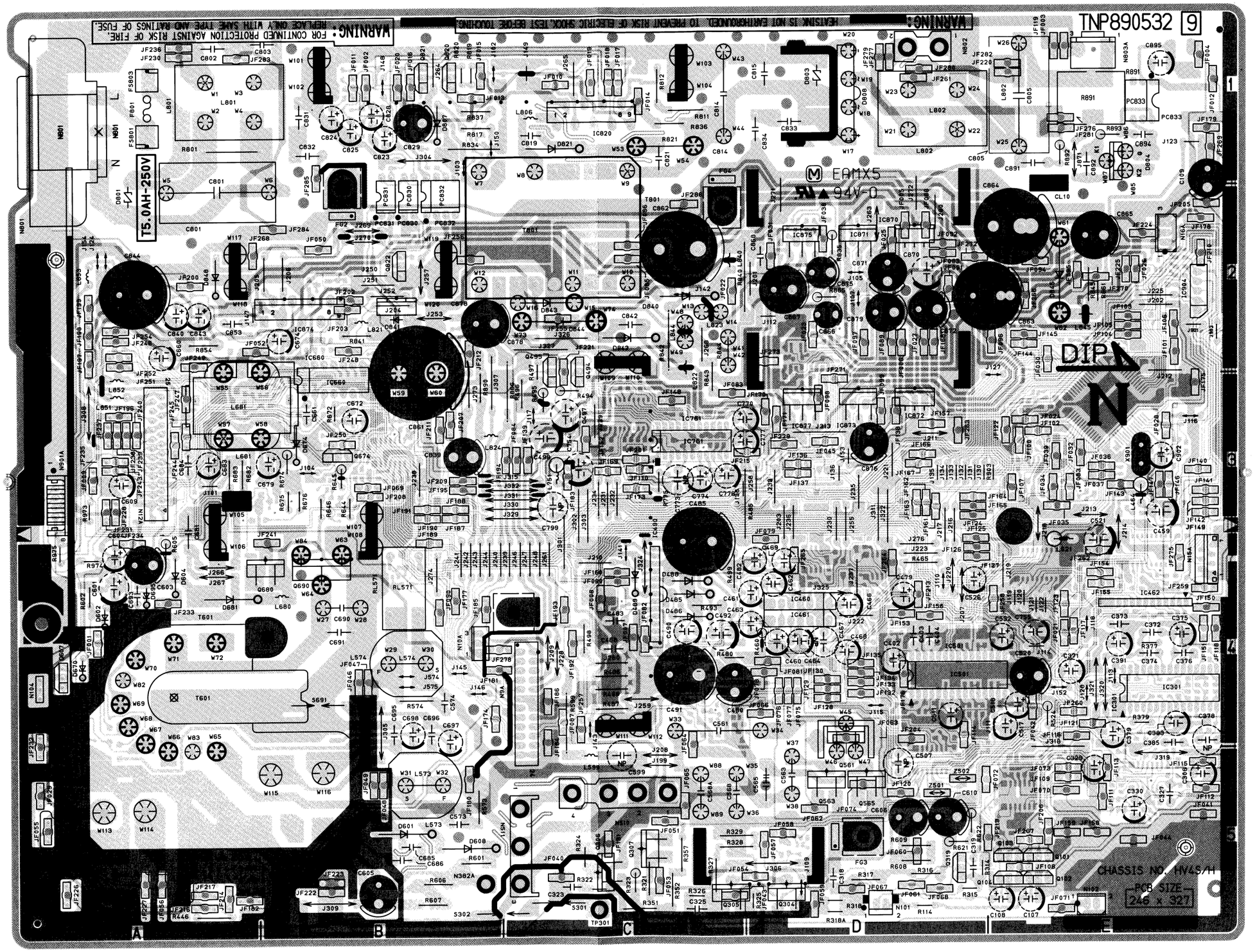
SHETT (9) TILT CONTROL / DAF OUT / MOIRE REDUCTION



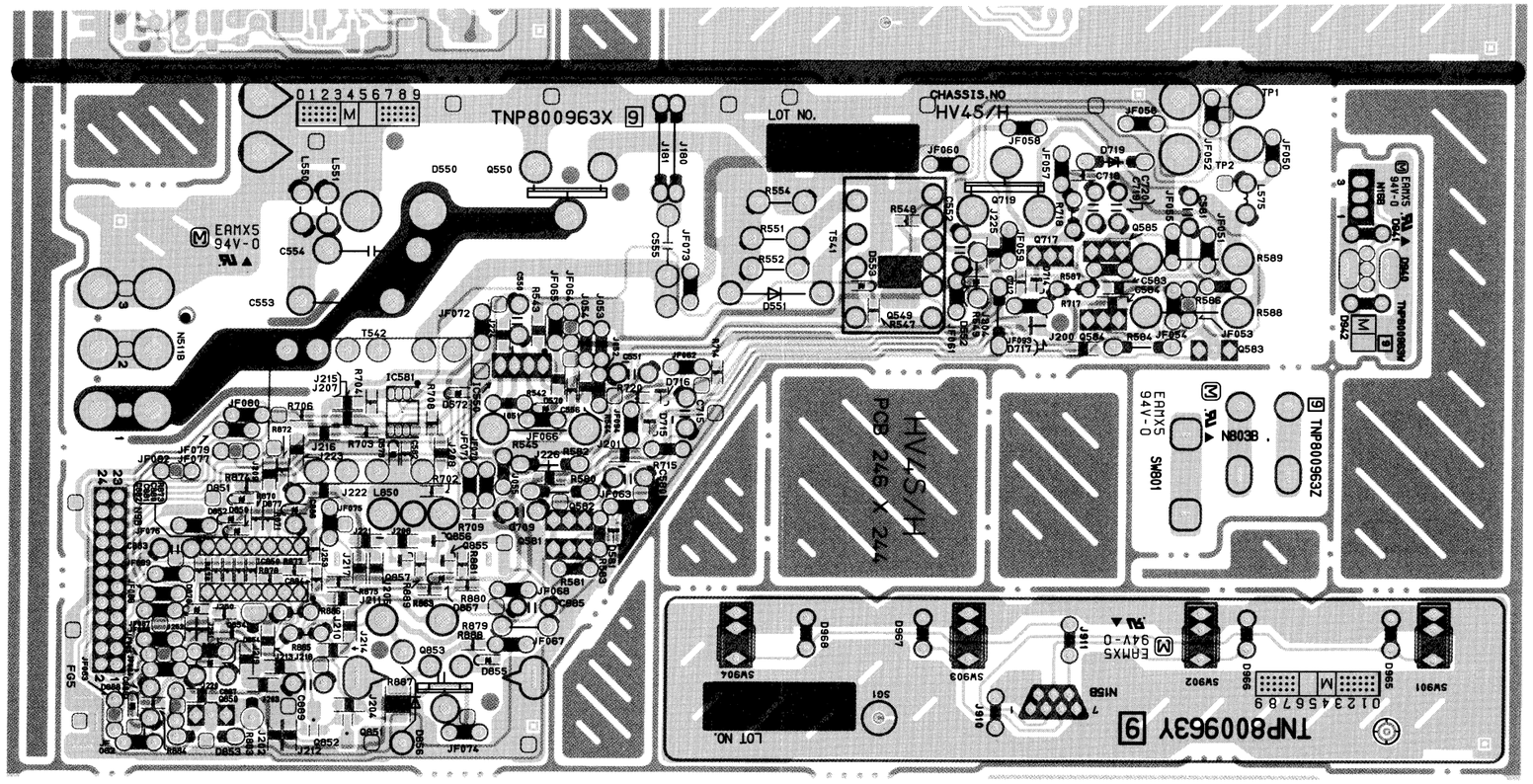
MAIN BOARD (Solder side)



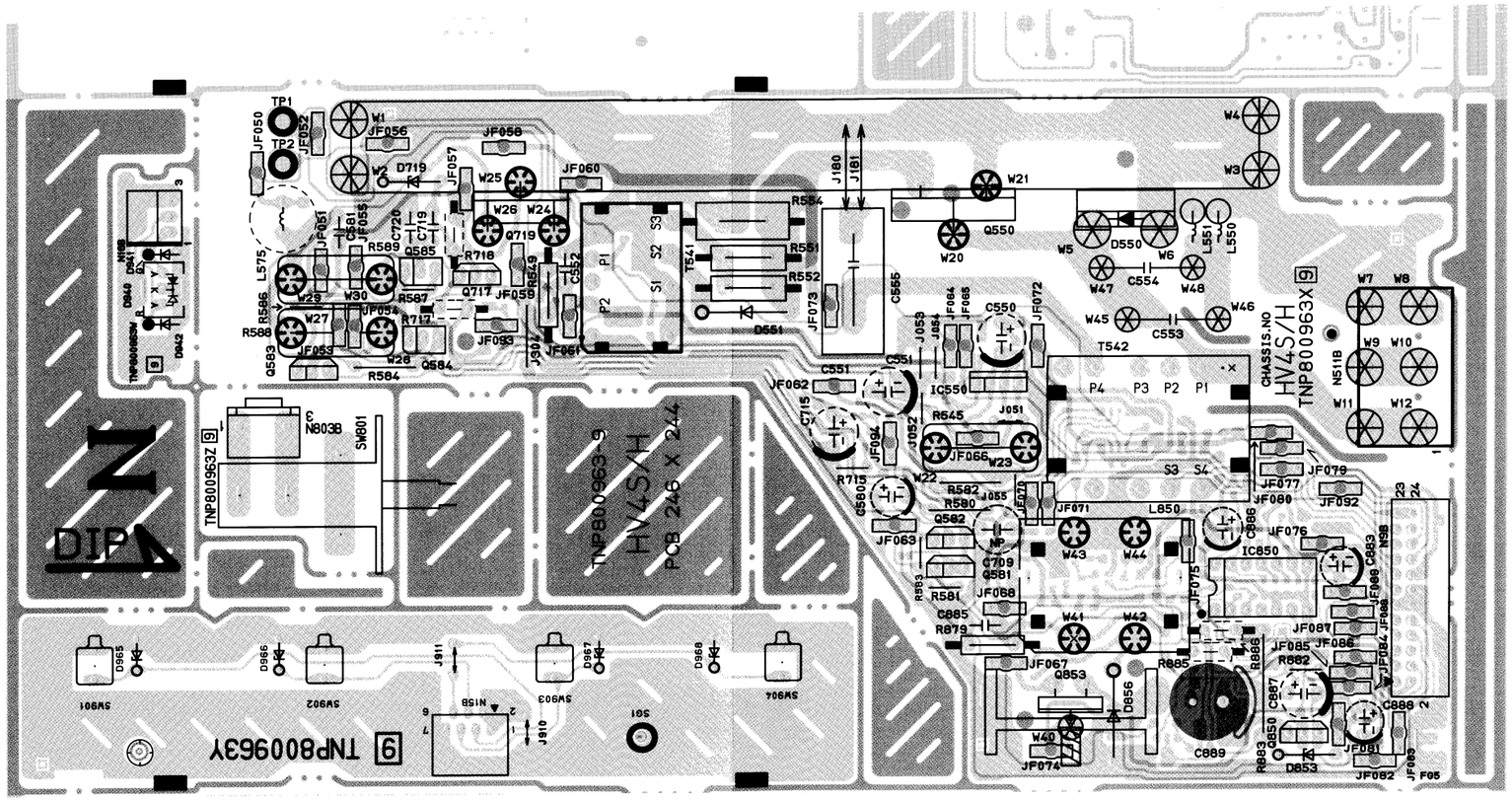
MAIN BOARD (Parts side)



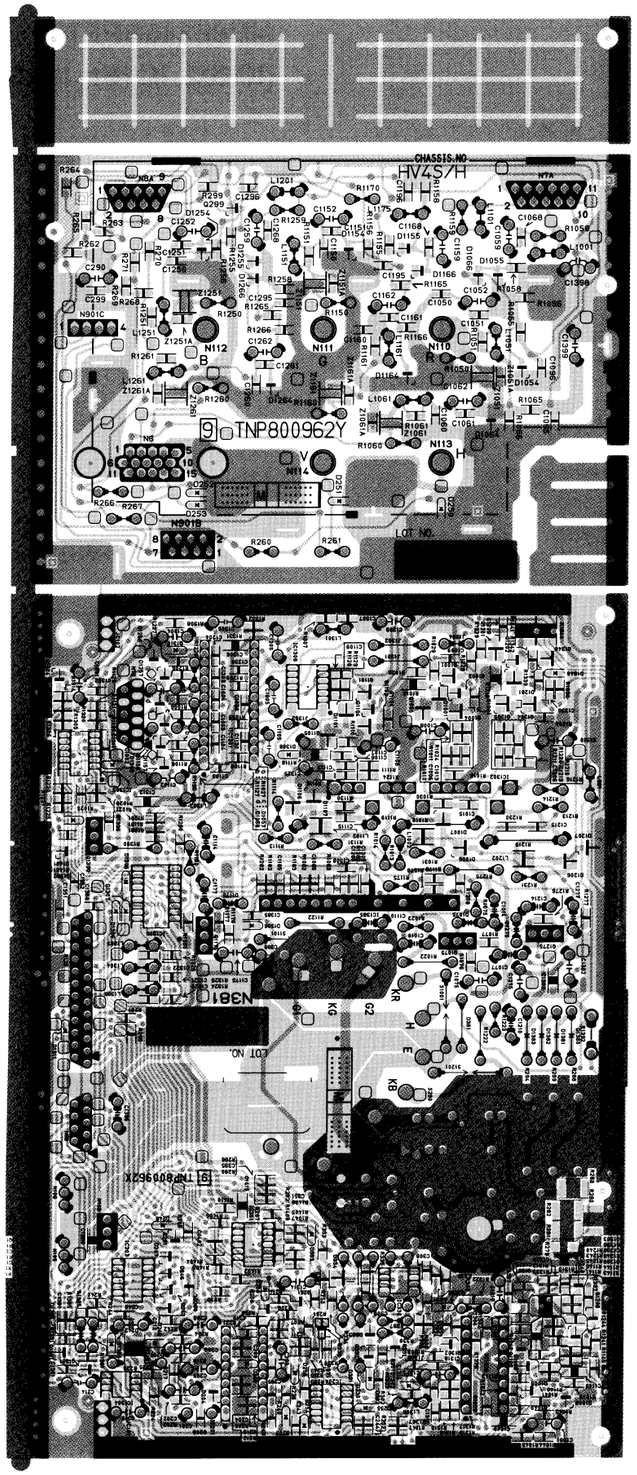
H. DEF. BOARD (Soldr side)



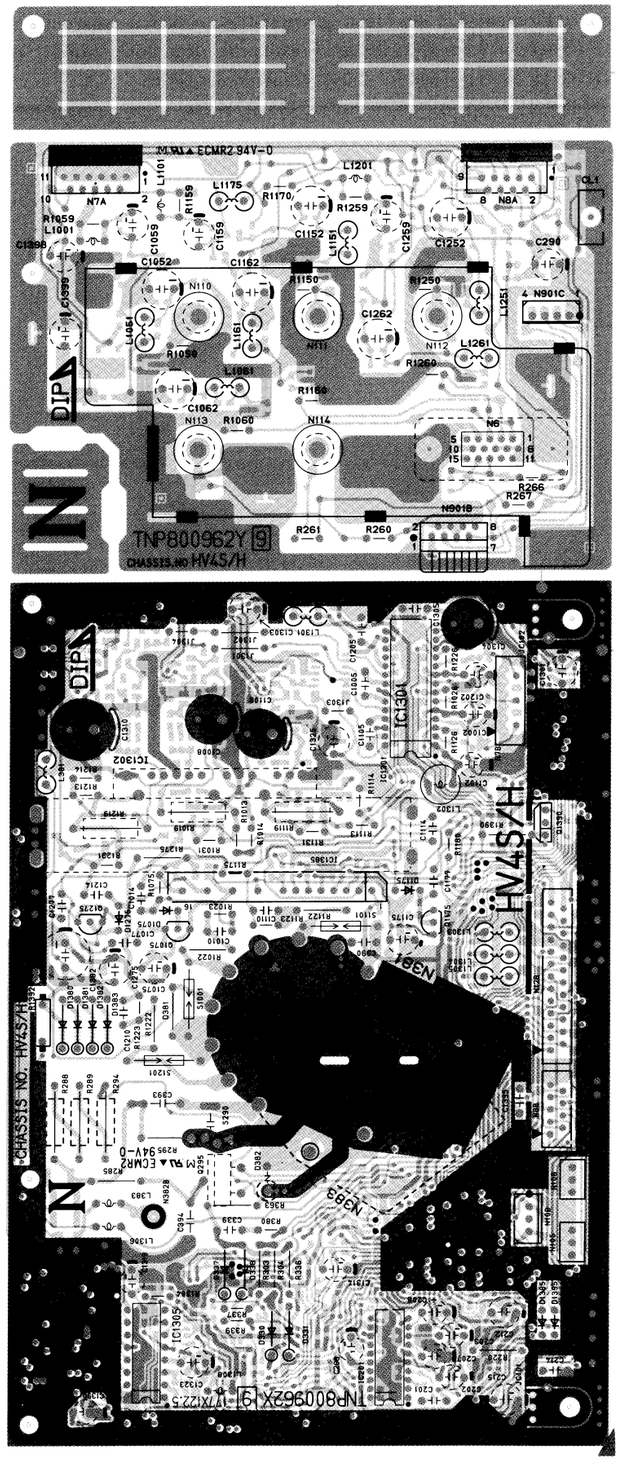
H. DEF. BOARD (Parts side)



VIDEO BOARD (Solder side)



VIDEO BOARD (Parts side)



SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE

The component identified by shading or international symbol ⚠ on the following schematic diagrams incorporate special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for those critical components.

NOTES :

1. RESISTOR

All resistors are carbon 1/4W resistor, unless otherwise noted by the following marks.
Unit of resistance is ohm (Ω), (K = 1,000, M = 1,000,000)

- ◯ : Non Flammable
- ⊠ : Metal Oxide
- □ : Wire Wound
- ⊗ : Fusible
- ◪ : Flame Proof Rectangular
- △ : Solid
- ◎ : Metal (Precision and high stability)
- : Thermistor
- : Positive coefficient Thermistor

2. CAPACITOR

All capacitors are ceramic 50V capacitor, unless otherwise noted by the following marks.
Unit of capacitance is μF, unless otherwise noted.

- : Electrolytic
- Ⓣ : Tantalum
- NP : Bipolar
- Ⓢ : Polystyrene
- ⊗ : Temperature Compensation
- Ⓜ : Polyester
- ⓜ : Metalized Polyester
- ⊠ : Polypropylene
- △ : Mica
- ◯ : Ceramic
- ◎ : Ceramic (SL)

3. COIL

Unit of inductance is μH, unless otherwise noted.

4. VOLTAGE MEASUREMENT

Voltage is measured by a digital meter receiving normal signal.

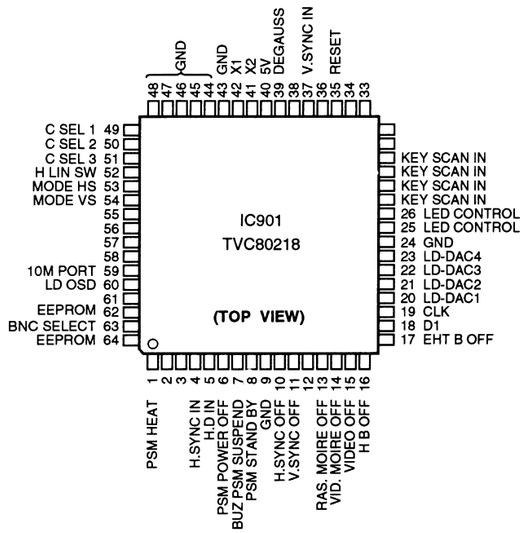
5. This schematic diagram is the letest at the time of printing and is subject to change without notice.

SERVICE NOTES :

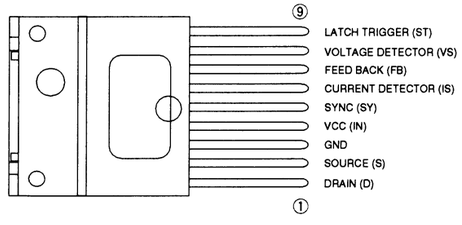
This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

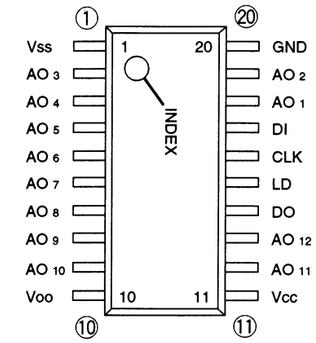
TVC80218 (IC901)



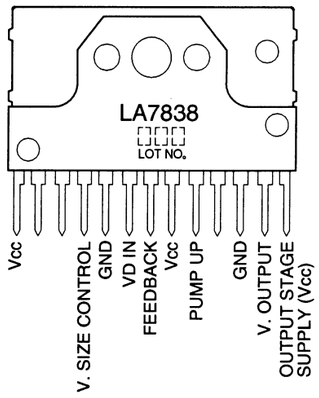
STR-S6533 (IC820)



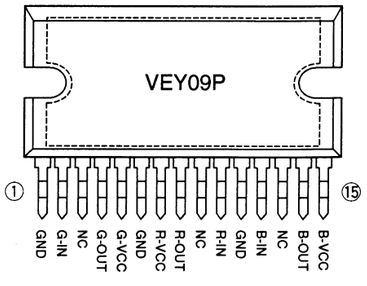
MB88346BPFTF (IC502, IC751, IC1306, IC459)



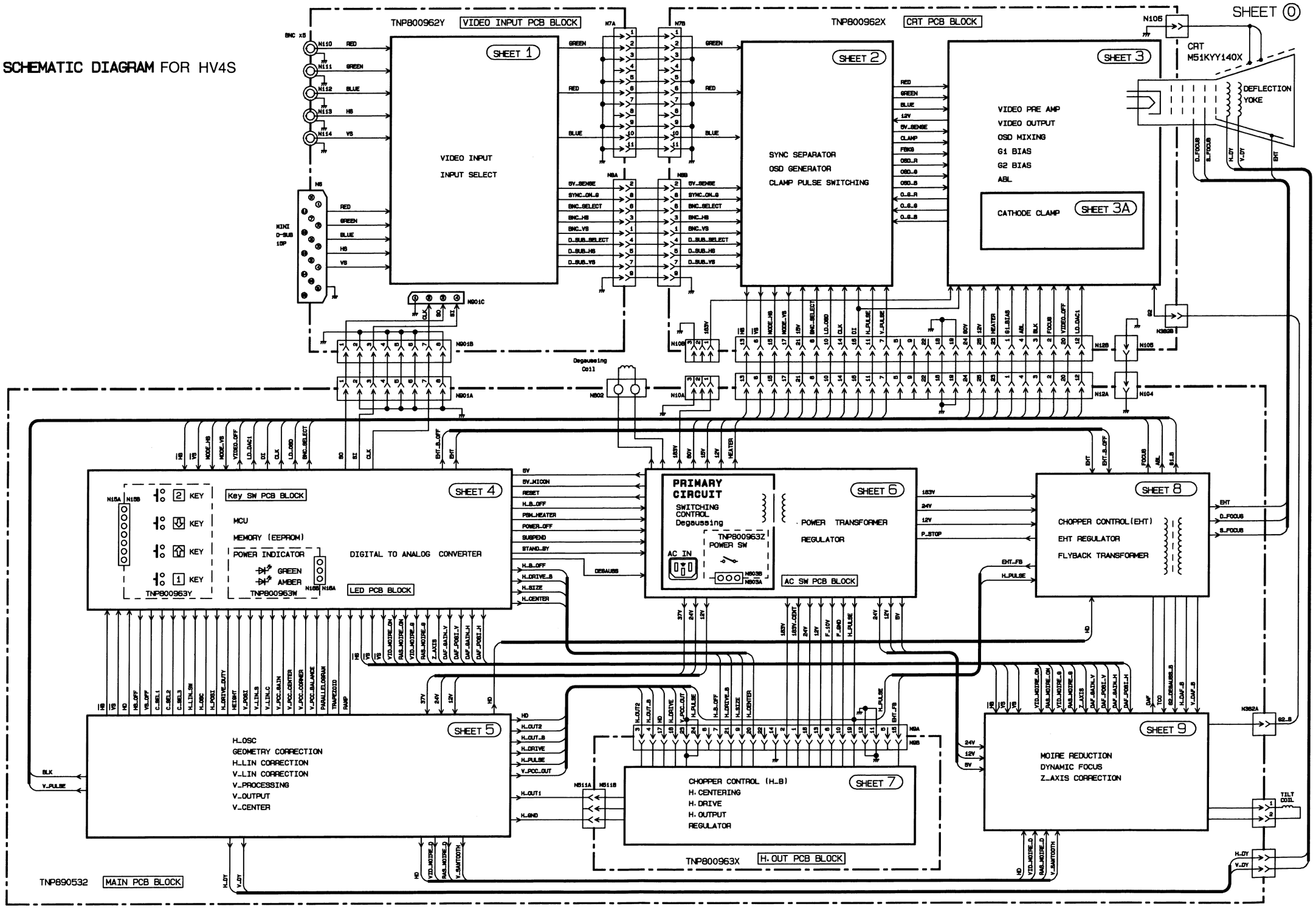
LA7838 (IC490)

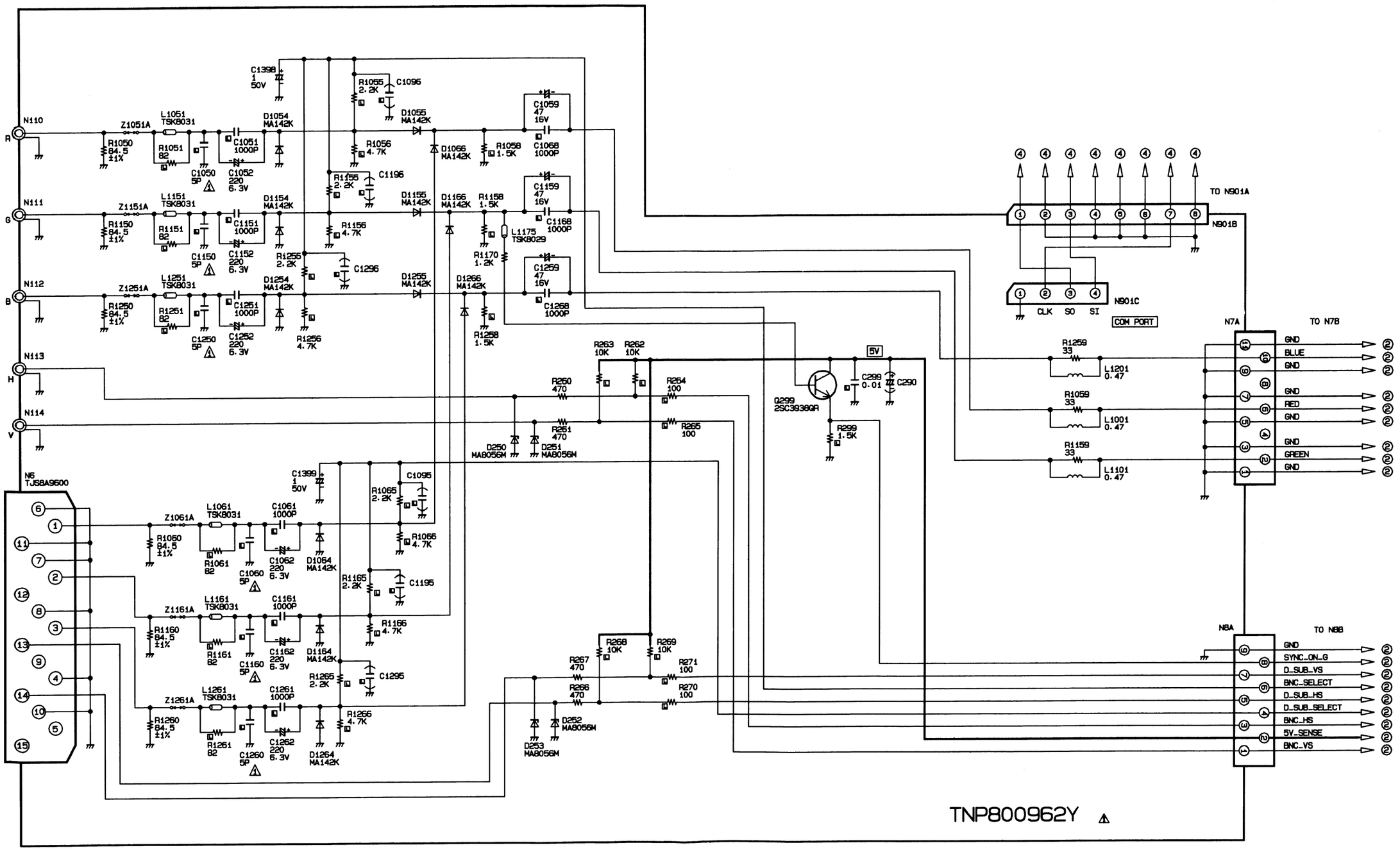


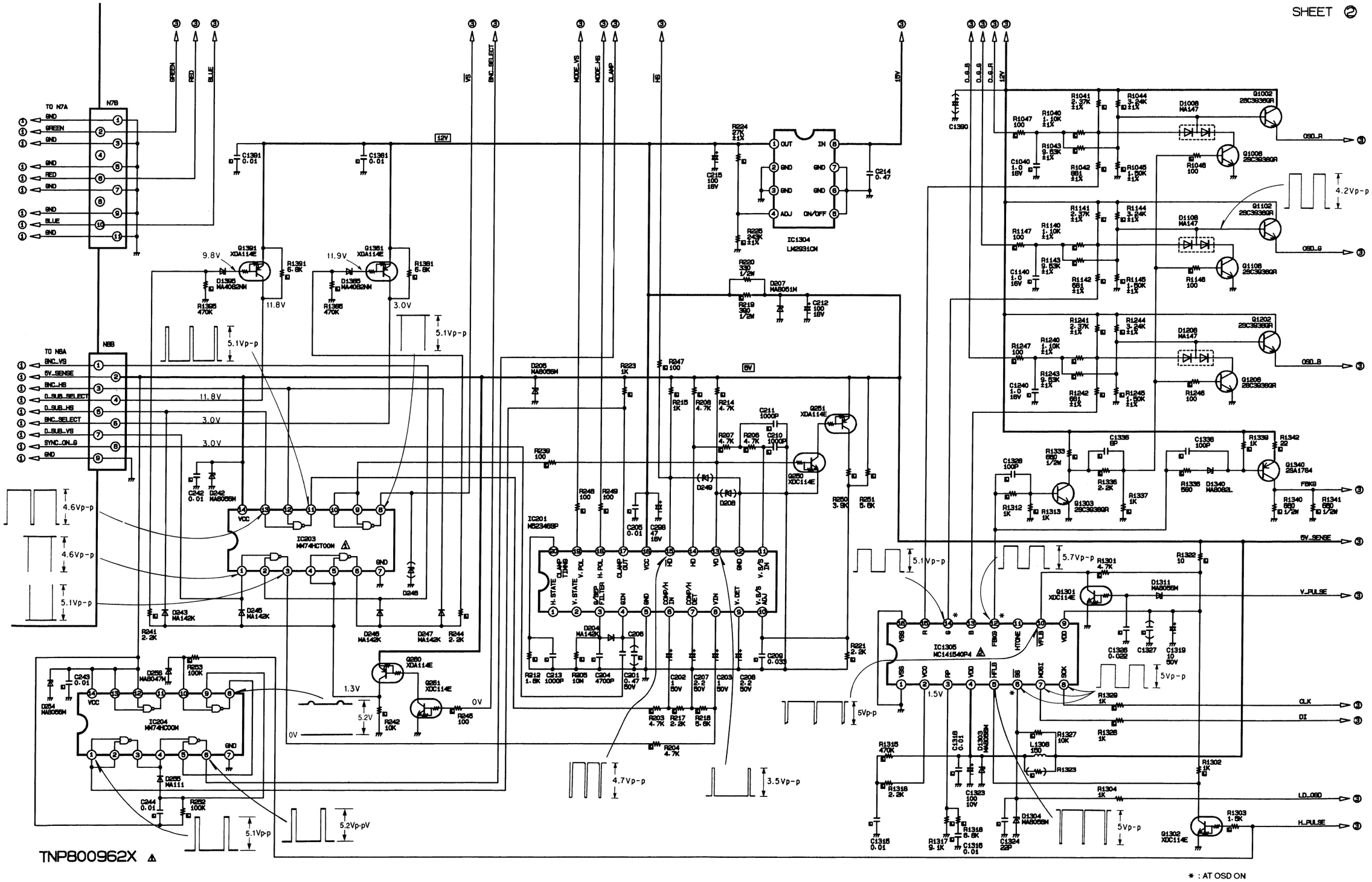
VEY09P (IC1302)

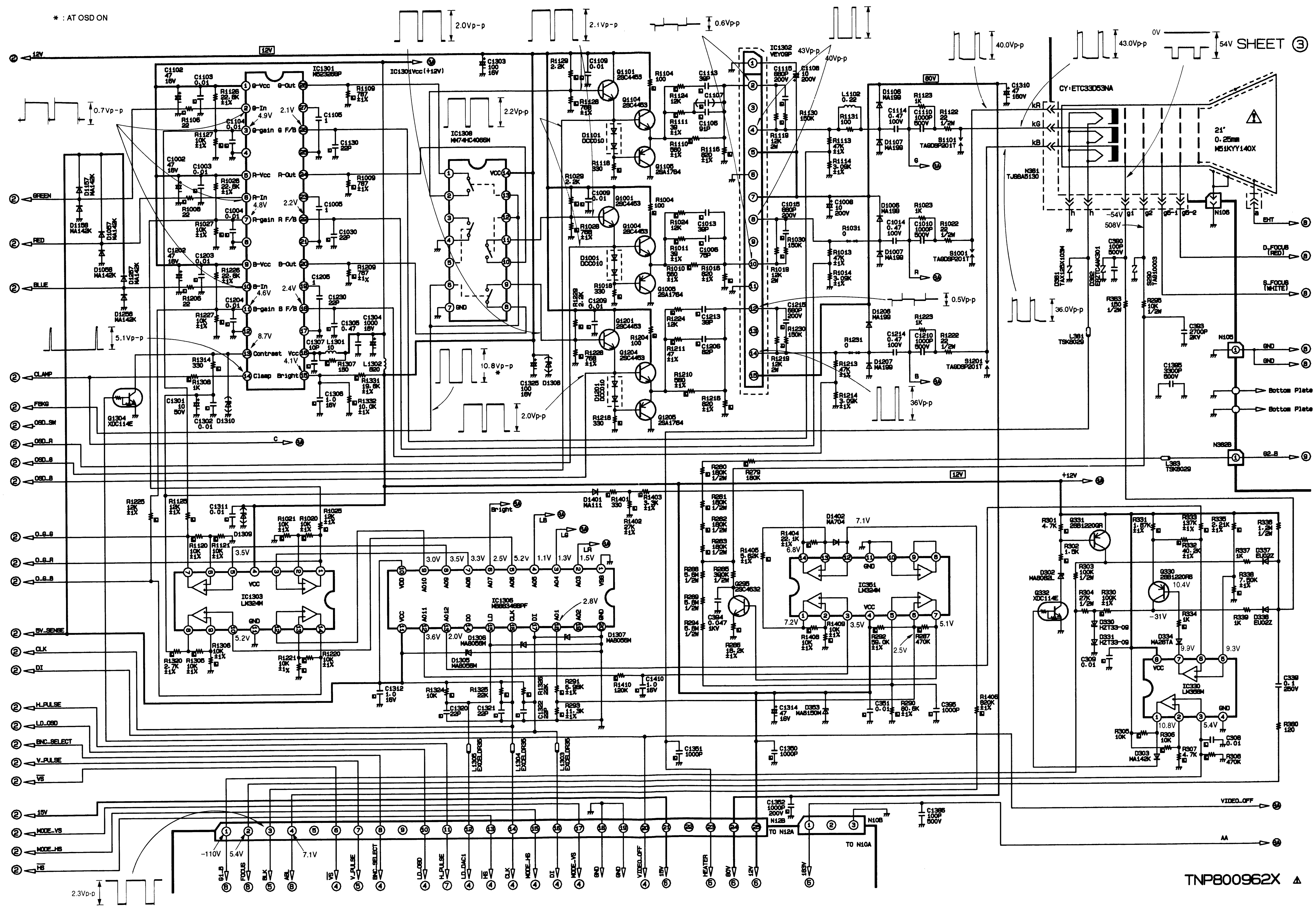


SCHEMATIC DIAGRAM FOR HV4S




N110
N111
N112
N113
N114
N6
TJS8A9600
Z1051A
Z1151A
Z1251A
Z1061A
Z1161A
Z1261A
L1051 TSK8031
L1151 TSK8031
L1251 TSK8031
L1061 TSK8031
L1161 TSK8031
L1261 TSK8031
R1050 84.5 ±1%
R1150
R1250
R1060
R1160
R1260
R1051 82
R1151
R1251
R1061
R1161
R1261
C1050 5P
C1150
C1250
C1060
C1160
C1260
C1051 1000P
C1151
C1251
C1061
C1161
C1261
C1052 220 6.3V
C1152
C1252
C1062
C1162
C1262
C1398 1 50V
C1399
R1055 2.2K
C1096
R1056 4.7K
R1155
R1255
R1065
R1165
R1265
R1156
R1256
R1066
R1166
R1266
C1196
C1296
C1095
C1195
C1295
D1054 MA142K
D1154
D1254
D1064
D1164
D1264
D1055 MA142K
D1155
D1255
D1066
D1166
D1266
R1058 1.5K
R1158
R1170 1.2K
R1258
C1059 47 16V
C1159
C1259
C1068 1000P
C1168
C1268
L1175 TSK8029
D250 MA8056M
D251
D252
D253
R250 470
R251
R260
R261
R263 10K
R262
R264 100
R265
R267 470
R266
R268 10K
R269
R271 100
R270
5V
Q299 2SC3939QR
C299 0.01
C290
R299 1.5K
TO N901A
N901B
N901C
CLK SO SI
COM PORT
N7A
TO N7B
R1259 33
L1201 0.47
R1059 33
L1001 0.47
R1159 33
L1101 0.47
GND
BLUE
GND
GND
RED
GND
GND
GREEN
GND
N8A
TO N8B
GND
SYNC_ON_G
D_SUB_VS
BNC_SELECT
D_SUB_HS
D_SUB_SELECT
BNC_HS
5V_SENSE
BNC_VS
TNP800962Y ⚠

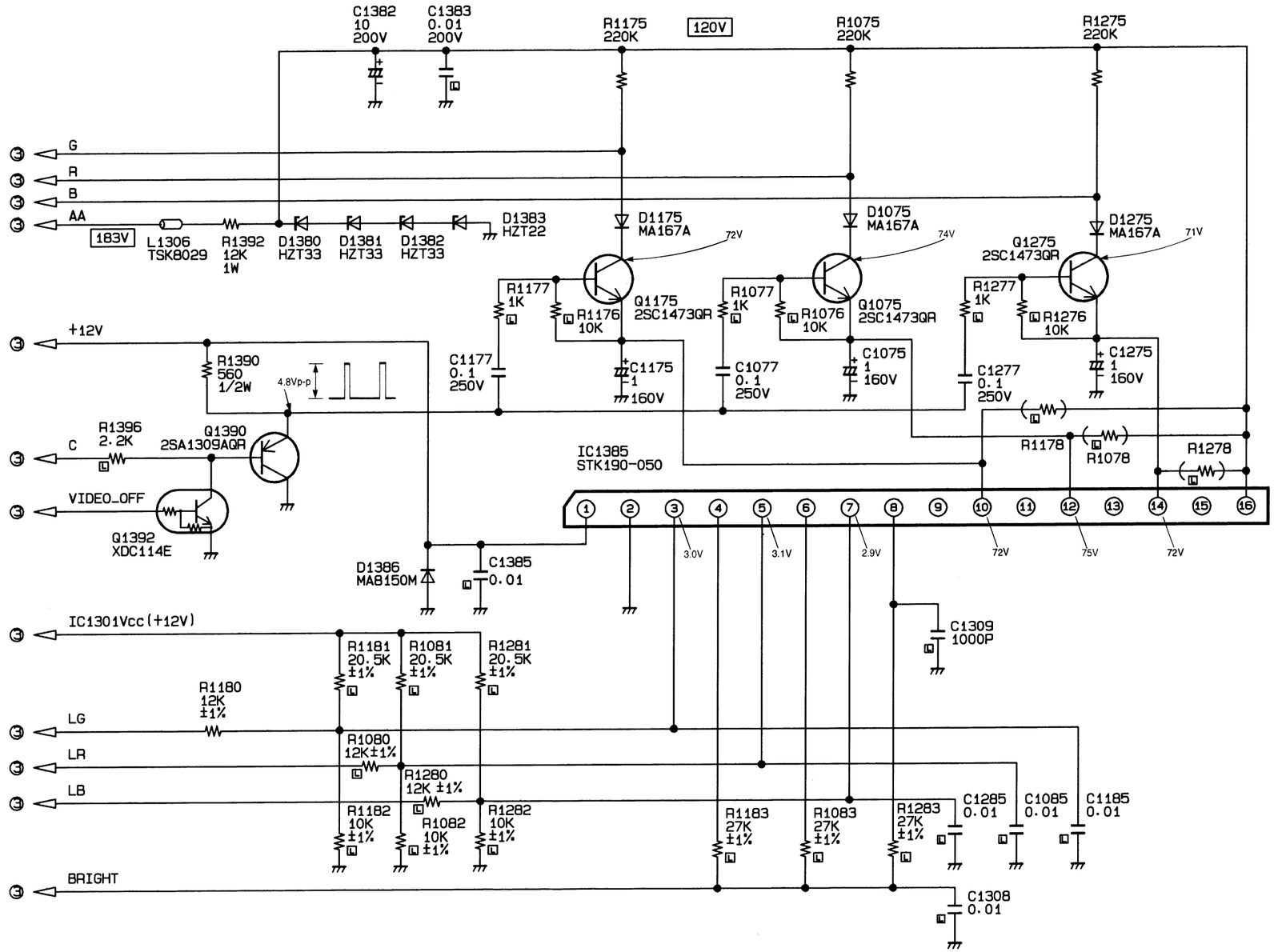

TO N7A
GND
GREEN
GND
GND
RED
GND
GND
BLUE
GND
N7B
GREEN
RED
BLUE
VS
BNC_SELECT
MODE_VS
MODE_HS
CLAMP
HS
15V
12V
C1391 0.01
C1381 0.01
Q1391 XDA114E
Q1381 XDA114E
9.8V
11.9V
D1385 MA4082NM
R1395 470K
R1385 470K
R1391 6.8K
R1381 6.8K
11.8V
3.0V
5.1Vp-p
R224 27K ±1%
C215 100 16V
IC1304 LM2931CM
OUT
GND
ADJ
IN
ON/OFF
C214 0.47
R225 243K ±1%
R220 330 1/2W
R219 360 1/2W
D207 MA8051M
C212 22 100 16V
TO N8A
BNC_VS
5V_SENSE
BNC_HS
D_SUB_SELECT
D_SUB_HS
BNC_SELECT
D_SUB_VS
SYNC_ON_G
GND
N8B
11.8V
3.0V
3.0V
D205 MA8056M
R223 1K
R947 100
5V
R215 1K
R208 4.7K
R214 4.7K
C211 1000P
Q251 XDA114E
R207 4.7K
R206 4.7K
C210 1000P
Q250 XDC114E
R250 3.9K
R251 5.6K
R239 100
D249
D208
R248 100
R249 100
C205 0.01
C208 47 16V
IC201 M52346SP
H.STATE
V.STATE
H.POL
V.POL
CLAMP TIMING
SWEEP FILTER
CLAMP OUT
VCC
HD
HD
VD
GND
V.S/S ADJ
SDIN
SDIN
COMP/H IN
COMP/H OUT
VDIN
V.DET
V.S/S ADJ
D204 MA142K
C206
R212 1.5K
C213 1000P
R205 10M
C204 4700P
C201 0.47 50V
C202 1 50V
C207 1 50V
C203 1 50V
C209 0.033
C208 1 50V
R221 2.2K
R203 4.7K
R217 2.2K
R218 9.6K
R204 4.7K
4.7Vp-p
3.5Vp-p
5Vp-p
1.5V
IC1305 MC141540P4
VSS
VCO
RP
VDD
VFLB
SS
MOSI
SCK
R
G
B
FBKG
HTONE
VFLB
VDD
VSS
R1329 1K
R1328 1K
R1327 10K
L1308 150
R1323
R1315 470K
R1316 2.2K
C1345 0.01
C1316 0.01
D1303 MA8056M
C1323 100 10V
R1317 9.1K
R1318 6.8K
C1315 0.01
D1304 MA8056M
C1324 22P
R1304 1K
R1302 1K
R1303 1.5K
Q1302 XDC114E
CLK
DI
LD_OSD
H_PULSE
5Vp-p
5.7Vp-p
R1301 4.7K
Q1301 XDC114E
D1311 MA8056M
V_PULSE
R1322 10
C1326 0.022
C1327
C1319 10 50V
5V_SENSE
C1336 6P
C1336 100P
R1339 1K
R1342 22
Q1340 2SA1784
FBKG
R1340 680 1/2W
R1341 680 1/2W
C1328 100P
R1333 680 1/2W
R1336 2.2K
R1337 1K
R1312 1K
R1313 1K
Q1303 2SC3938GR
R1336 560
D1340 MA8082L
D1008 MA147
Q1002 2SC3938GR
Q1008 2SC3938GR
R1046 100
OSD_R
D1108 MA147
Q1102 2SC3938GR
Q1108 2SC3938GR
R1146 100
OSD_G
D1208 MA147
Q1202 2SC3938GR
Q1208 2SC3938GR
R1246 100
OSD_B
C1390
R1047 100
R1040 1.10K ±1%
R1041 2.37K ±1%
R1044 3.24K ±1%
C1040 1.0 16V
R1043 9.53K ±1%
R1042 681 ±1%
R1045 1.50K ±1%
R1147 100
R1140 1.10K ±1%
R1141 2.37K ±1%
R1144 3.24K ±1%
C1140 1.0 16V
R1143 9.53K ±1%
R1142 681 ±1%
R1145 1.50K ±1%
R1247 100
R1240 1.10K ±1%
R1241 2.37K ±1%
R1244 3.24K ±1%
C1240 1.0 16V
R1243 9.53K ±1%
R1242 681 ±1%
R1245 1.50K ±1%
4.2Vp-p
4.6Vp-p
4.6Vp-p
5.1Vp-p
IC203 MM74HCT00M
IC204 MM74HD00M
VCC
GND
C242 0.01
D242 MA8056M
D243 MA142K
D245 MA142K
D246 MA142K
D247 MA142K
R244 2.2K
R241 2.2K
C243 0.01
D256 MA8047M
R253 100K
D254 MA8056M
D255 MA111
C244 0.01
R252 100K
5.1Vp-p
5.2Vp-pV
1.3V
5.2V
0V
0V
Q260 XDA114E
Q261 XDC114E
R242 10K
R245 100
D248
TNP800962X ⚠
* : AT OSD ON

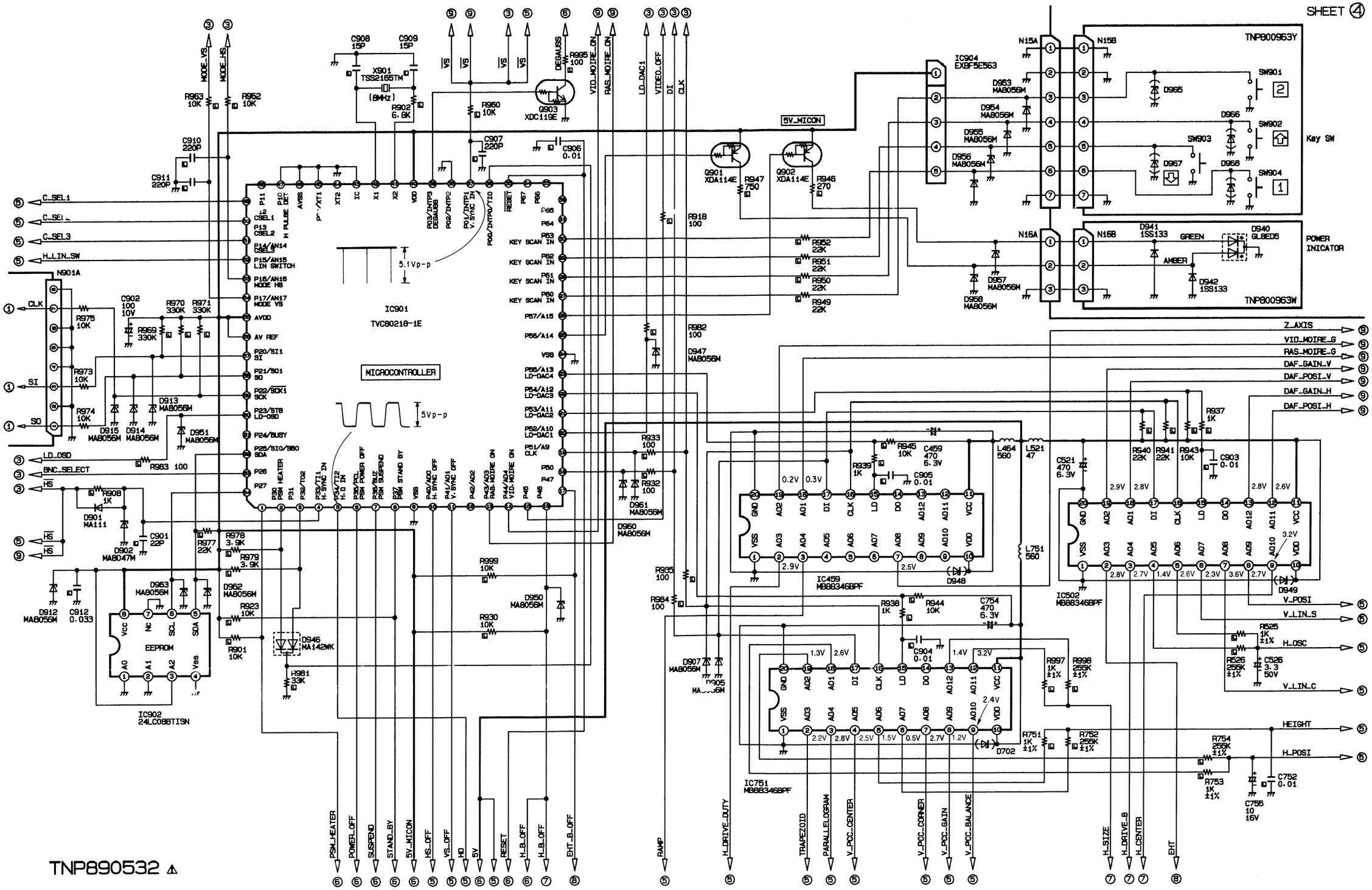


* : AT OSD ON
SHEET ③
IC1301 M52326SP
IC1308 MM74HC4066M
IC1302 VEY09P
IC1303 LM324M
IC1306 MB88346BPF
IC351 LM324M
IC330 LM358M
CY:ETC33D53NA
21" 0.25mm M51KYY140X
12V
GREEN
RED
BLUE
CLAMP
FBKG
OSD_SW
OSD_R
OSD_G
OSD_B
O_G_G
O_G_R
O_G_B
5V_SENSE
CLK
DI
H_PULSE
LD_OSD
BNC_SELECT
V_PULSE
VS
15V
MODE_VS
MODE_HS
HS
EHT
D_FOCUS (RED)
S_FOCUS (WHITE)
GND
Bottom Plate
G2_B
VIDEO_OFF
AA
TO N12A
TO N10A
TNP800962X

Important safety notice

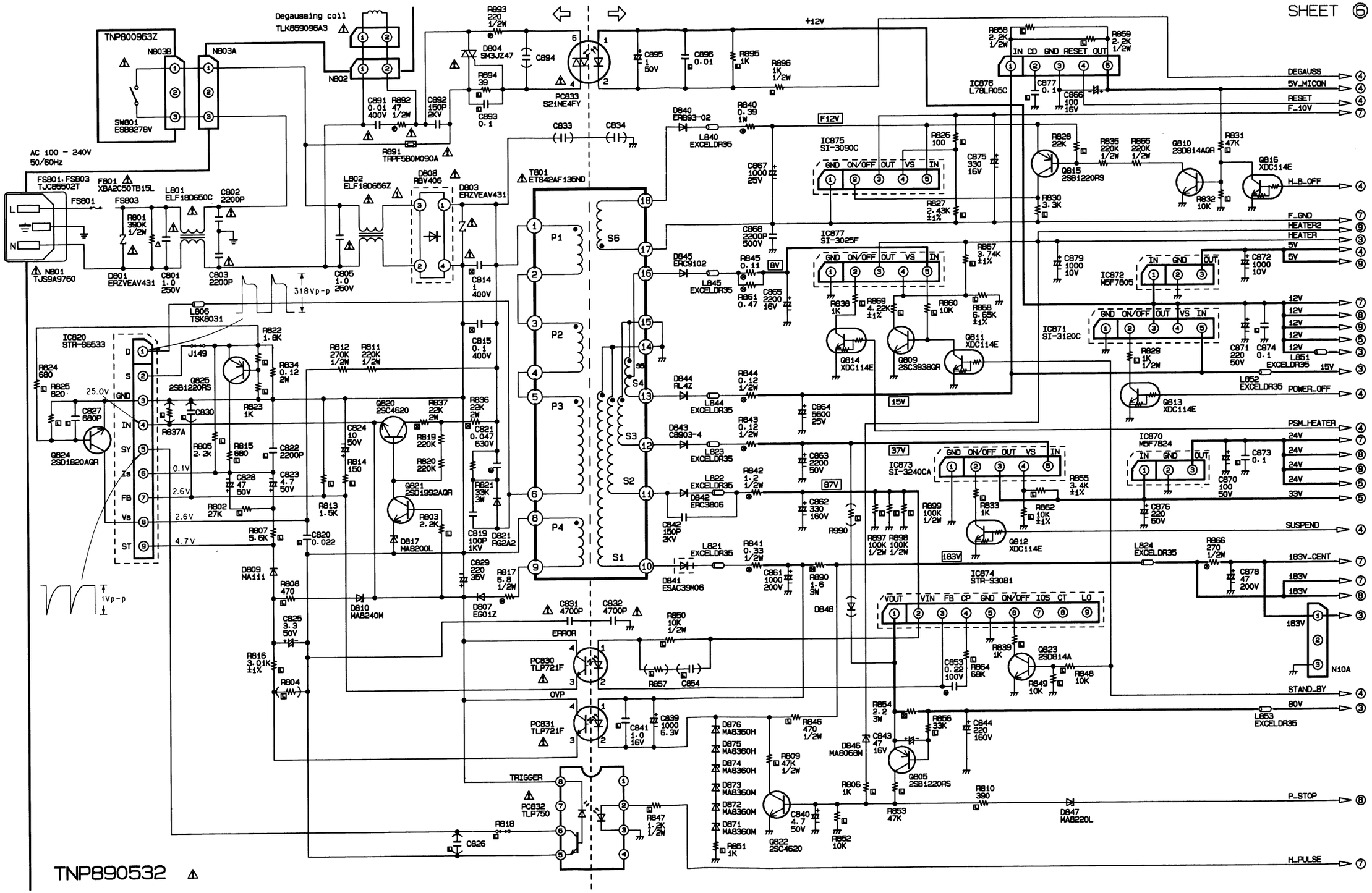
Components identified ⚠ by mark have special characteristics important for safety. When replacing any of components, use only manufacturer's specified parts.




MODE_VS
MODE_HS
C908 15P
C909 15P
X901 TSS2165TM (8MHz)
R902 6.8K
R963 10K
R962 10K
R960 10K
C910 220P
C911 220P
C907 220P
C906 0.01
R995 100
DEGAUSS
Q903 XDC119E
VID_MOIRE_ON
RAS_MOIRE_ON
LD_DAC1
VIDEO_OFF
DI
CLK
5V_MICON
Q901 XDA114E
Q902 XDA114E
R947 750
R946 270
R918 100
IC904 EXBF5E563
D953 MA8056M
D954 MA8056M
D955 MA8056M
D956 MA8056M
N15A
N15B
TNP800953Y
D965
D966
D967
D968
SW901
SW902
SW903
SW904
Key SW
N16A
N16B
D941 1SS133
GREEN
AMBER
D940 GLBED5
D942 1SS133
D957 MA8056M
D958 MA8056M
POWER INICATOR
TNP800953W
C_SEL1
C_SEL2
C_SEL3
H_LIN_SW
N901A
CLK
SI
SO
LD_OSD
BNC_SELECT
H
V
R975 10K
R973 10K
R974 10K
R983 100
R908 1K
D901 MA111
D902 MA8047M
C901 22P
R977 22K
R978 3.9K
R979 3.9K
R901 10K
C902 100 10V
R970 330K
R971 330K
R969 330K
D913 MA8056M
D915 MA8056M
D914 MA8056M
D951 MA8056M
D912 MA8056M
C912 0.033
D963 MA8056M
D962 MA8056M
R923 10K
D946 MA142WK
R981 33K
EEPROM
IC902 24LC08BTISN
IC901 TVC80218-1E
MICROCONTROLLER
5.1Vp-p
5Vp-p
R999 10K
R930 10K
D950 MA8056M
R933 100
R932 100
D961 MA8056M
D960 MA8056M
R982 100
D947 MA8056M
R952 22K
R951 22K
R950 22K
R949 22K
R985 100
R984 100
D907 MA8056M
D905 MA8056M
IC459 MB88346BPF
IC751 MB88346BPF
IC502 MB88346BPF
D948
D949
D702
R945 10K
C459 470 6.3V
C905 0.01
R939 1K
L464 560
L521 47
L751 560
C521 470 6.3V
R540 22K
R941 22K
R943 10K
C903 0.01
R937 1K
R938 1K
R944 10K
C754 470 6.3V
C904 0.01
R997 1K ±1%
R998 255K ±1%
R751 1K ±1%
R752 255K ±1%
R753 1K ±1%
R754 255K ±1%
C752 0.01
C755 10 16V
R525 1K ±1%
R526 255K ±1%
C526 3.3 50V
Z_AXIS
VID_MOIRE_G
RAS_MOIRE_G
DAF_GAIN_V
DAF_POSI_V
DAF_GAIN_H
DAF_POSI_H
V_POSI
V_LIN_S
H_OSC
V_LIN_C
HEIGHT
H_POSI
PSM_HEATER
POWER_OFF
SUSPEND
STAND_BY
5V_MICON
HS_OFF
VS_OFF
HD
5V
RESET
H_B_OFF
H_B_OFF
EHT_B_OFF
RAMP
H_DRIVE_DUTY
TRAPEZOID
PARALLELOGRAM
V_PCC_CENTER
V_PCC_CORNER
V_PCC_GAIN
V_PCC_BALANCE
H_SIZE
H_DRIVE_B
H_CENTER
EHT
TNP890532 ⚠

SHEET ⑤

TNP890532 ⚠


TNP800963Z
N803B
N803A
SW801 ES88276V
Degaussing coil TLK859096A3
N802
AC 100 - 240V 50/60Hz
FS801,FS803 TJC85502T
FB01 XBA2C50TB15L
FS801
FS803
N801 TJS9A9760
L801 ELF18D650C
L802 ELF18D656Z
L806 TSK8031
D801 ERZVEAV431
D803 ERZVEAV431
D808 RBV406
T901 ETS42AF135ND
318Vp-p
IC820 STR-S6533
Q824 2SD1820AGR
Q825 2SB1220RS
Q820 2SC4620
Q821 2SD1992AGR
D817 MA8200L
D809 MA111
D810 MA8240M
D807 EG01Z
D804 SM3JZ47
PC833 S21ME4FY
PC830 TLP721F
PC831 TLP721F
PC832 TLP750
TRIGGER
ERROR
OVP
25.0V
0.1V
2.6V
2.6V
4.7V
1Vp-p
P1
P2
P3
P4
S1
S2
S3
S4
S6
+12V
F12V
15V
87V
37V
183V
IC875 SI-3090C
IC877 SI-3025F
IC873 SI-3240CA
IC874 STR-S3081
IC876 L78LR05C
IC872 M5F7805
IC871 SI-3120C
IC870 M5F7824
D840 ERB93-02
D845 ERC9102
D844 RL4Z
D843 C8903-4
D842 ERC3806
D841 ESAC39M06
D846 MA8068M
D876 MA8360H
D875 MA8360H
D874 MA8360H
D873 MA8360H
D872 MA8360H
D871 MA8360H
D847 MA8220L
Q809 2SC3938QR
Q810 2SD814AQR
Q811 XDC114E
Q812 XDC114E
Q813 XDC114E
Q814 XDC114E
Q815 XDC114E
Q822 2SC4620
Q823 2SD814A
Q805 2SB1220RS
DEGAUSS
5V_MICON
RESET
F_10V
H_B_OFF
F_GND
HEATER2
HEATER
5V
12V
POWER_OFF
PSM_HEATER
24V
33V
SUSPEND
183V-CENT
183V
N10A
STAND_BY
80V
P_STOP
H_PULSE
TNP890532 ⚠

SHEET ⑦

TO N9A

N98

⑤ 183V_CENT ①
⑤ 183V ②
⑤ H_OUT2 ③
⑤ H_OUT_B ④
④ H_B_OFF ⑦
⑤ F_10V ⑧
④ H_SIZE ⑨
⑤ F_GND ⑩
⑤ 12V ⑬
⑧ EHT_FB ⑮
⑥ 24V ⑯
⑤ HD ⑰
⑤ H_DRIVE ⑱
④ H_CENTER ⑳
④ H_DRIVE_B ㉑
③ H_PULSE ㉒
⑤ H_PULSE
⑥ H_PULSE
⑧ H_PULSE
⑤ V_PCC_OUT ㉔

N511B

① H_OUT1 ⑤
②
③ H_GND ⑤

183V

12V

0V

5.8Vp-p
D572
IC581 LM358M
VCC ⑧
2.6V ③
GND ④
C550 100 35V
D573
C582 0.01
C709 10 50V
R708 82K
R703 39K
R709 100
R702 10K
R704 2.2K
R706 220

R581 11.5K ±1%
C580 100 25V
D581 MA142K
R583 6.49K ±1%
Q584 2SD2133S
87V
R587 3.3K
R588 15 5W
L575 TLH85815
Q581 2SB1546PQ
R580 51.1K 1/2W ±1%
Q582 2SB1546PQ
R584 5.6K 1/2W
C583 1 16V
R582 51.1K 1/2W ±1%
C584 1 16V
R589 15 5W
C581 0.22 250V
Q583 2SC4212H
Q585 2SB1413S
R586 1.21K ±1%

IC550 AN6531
4.9V
D570
R545 150 5W
32Vp-p
0.5Vp-p
TP1
15.5V
C551 100 35V
R551 1.5 2W
R552 1.8 2W
R542 3.24K ±1%
R544 13.3K ±1%
R543 56K
R549 560 1W
P1
S3
S2
S1
D551 ERA81-004
D552 MA111
TP2
P2
R547 47
Q549 2SK2015
D553 MA8150M
R548 3.3K
C552 3300P 500V
T541 TLH85407Z
R720 100K
D716 MA142K
D715 MA143A
R714 1.54K ±1%
C715 4.7 160V
R715 562 ±1%

4.2Vp-p
91V
5.7Vp-p
103V
C718 0.01
Q719 2SD1641
R718 3.3K 1/2W
D719 EM01Z
Q717 2SC1473QR
D714 MA142K
C719 0.01 250V
C712 0.01
R717 3.3K 1/2W
C720 0.01 250V
D717 MA28TA
5.2Vp-p

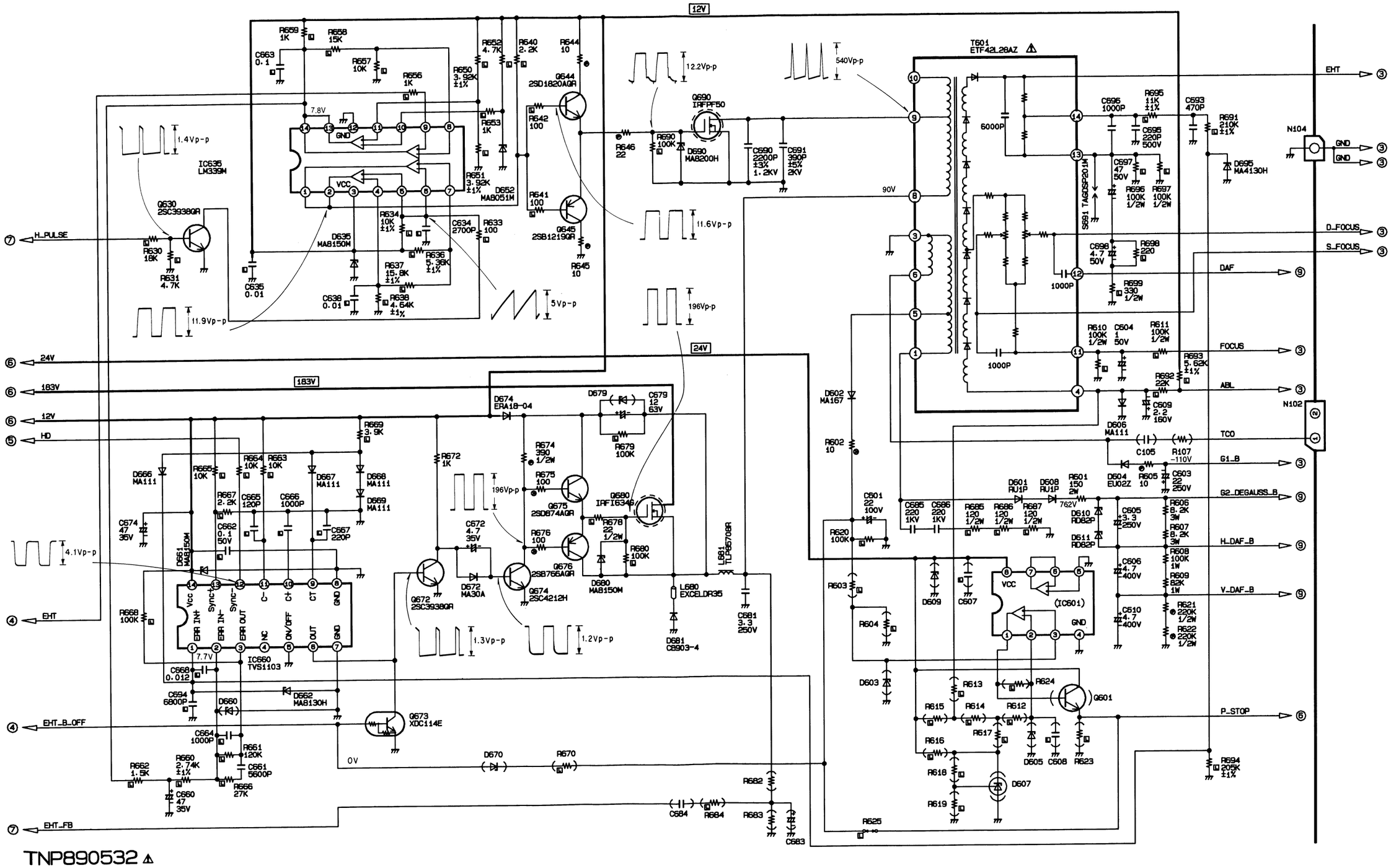
S3
S4
875Vp-p
T542 TLH35501Z1
P4
P1
Q550 2SC4288A
C554 2200P ±3% 1.5KV
C553 2200P ±3% 1.5KV
C555 3.3 250V
R554 6.8 3W
D550 FMP-G3FS
L550 EXCELSR35
L551 EXCELSR35
10.9Vp-p

R872 10K
R871 10K
R870 10K
R874 3.9K
D850 MA111
D851 MA111
D852 MA111
C880 120P
C881 1000P
C886 47 50V
D877 MA8150M
R873 2.2K
C882 220P
4.5Vp-p
IC850 TVS1103
Vcc
Sync+
Sync-
C-
C+
CT
GND
ERR IN+
ERR IN-
ERR OUT
NC
ON/OFF
OUT
GND
R875 100K
2.8V
2.8V
D878
R878 82K
R877 5.6K
C884 2200P
R876 511 ±1%
C883 47 25V

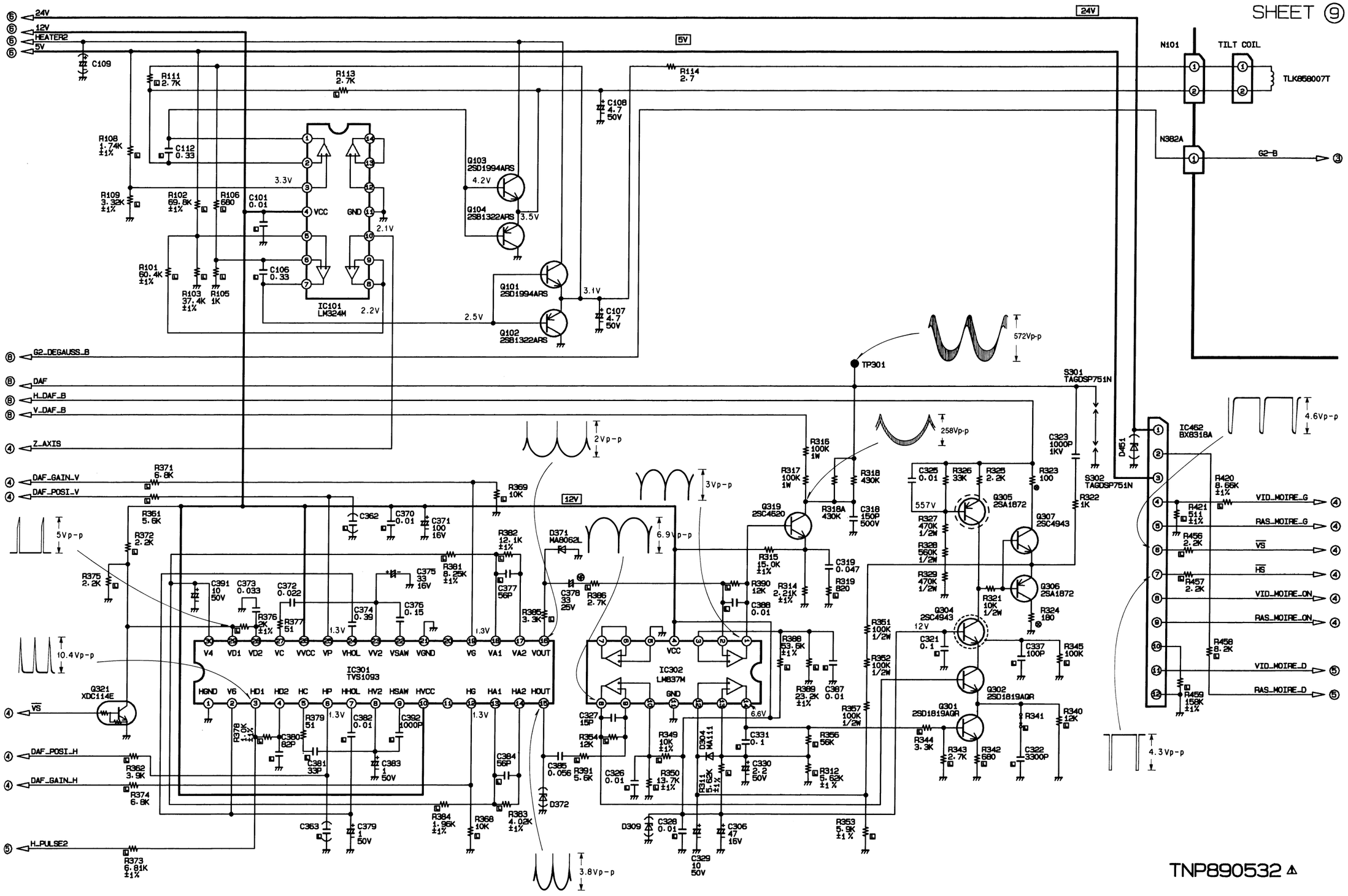
R882 1K
D853 ERA18-04
0.7Vp-p
185Vp-p
R883 390 1/2W
R885 100
Q851 2SD874AQR
R886 100
Q852 2SB766AQR
D888
C888 10 100V
R884 100K
Q853 IRFI634G
R887 22 1/2W
R888 100K
D855 MA8150M
185Vp-p
C887 4.7 35V
D854 MA30A
Q850 2SC4212H
1.3Vp-p
195Vp-p
D856 C8903-4
L850 TLP86708A
C889 68 200V
R879 68K 1W
C885 2700P 500V
R880 1.21K ±1%
R881 2.21K ±1%

R863 100
D857 MA8075H
R889 8.2K
Q854 2SC3938QR
Q856 XDC114E
Q855 XDC114E
Q857 XDC114E

TNP800963X ⚠

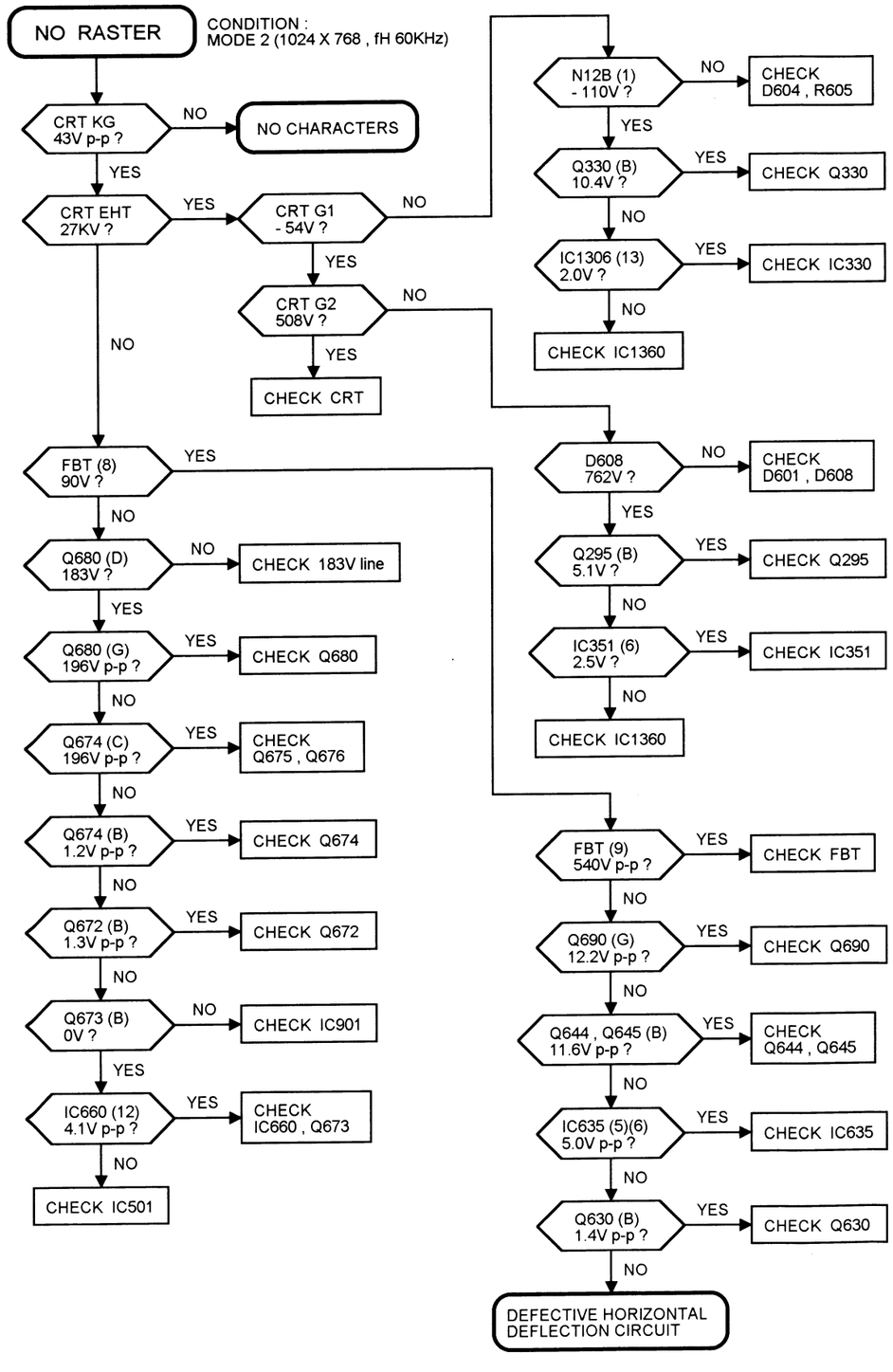

12V
183V
24V
90V
0V
7.8V
7.7V
1.4Vp-p
11.9Vp-p
4.1Vp-p
12.2Vp-p
11.6Vp-p
5Vp-p
196Vp-p
540Vp-p
1.3Vp-p
1.2Vp-p
IC635 LM339M
Q630 2SC3938QR
Q644 2SD1820AQR
Q645 2SB1219QR
Q690 IRFPF50
Q672 2SC3938QR
Q673 XDC114E
Q674 2SB766AQR
Q675 2SD874AQR
Q676 2SC4212H
Q680 IRFI634G
Q601
D635 MA8150M
D652 MA8051M
D660
D662 MA8130H
D672 MA30A
D674 ERA18-04
D679
D680 MA8150M
D681 C8903-4
D690 MA8200H
D695 MA4130H
D602 MA167
D605 MA111
D606 MA111
D607
D608 RU1P
D609
D610 RD82P
D611 RD82P
T601 ETF42L28AZ
IC660 TVS1103
(IC601)
VCC
GND
L680 EXCELDR35
L681 TLP8570GR
S691 TAGDSP201M
N104
N102
H_PULSE
24V
183V
12V
HD
EHT
EHT_B_OFF
EHT_FB
D_FOCUS
S_FOCUS
DAF
FOCUS
ABL
TCO
G1_B
G2_DEGAUSS_B
H_DAF_B
V_DAF_B
P_STOP
GND
GND

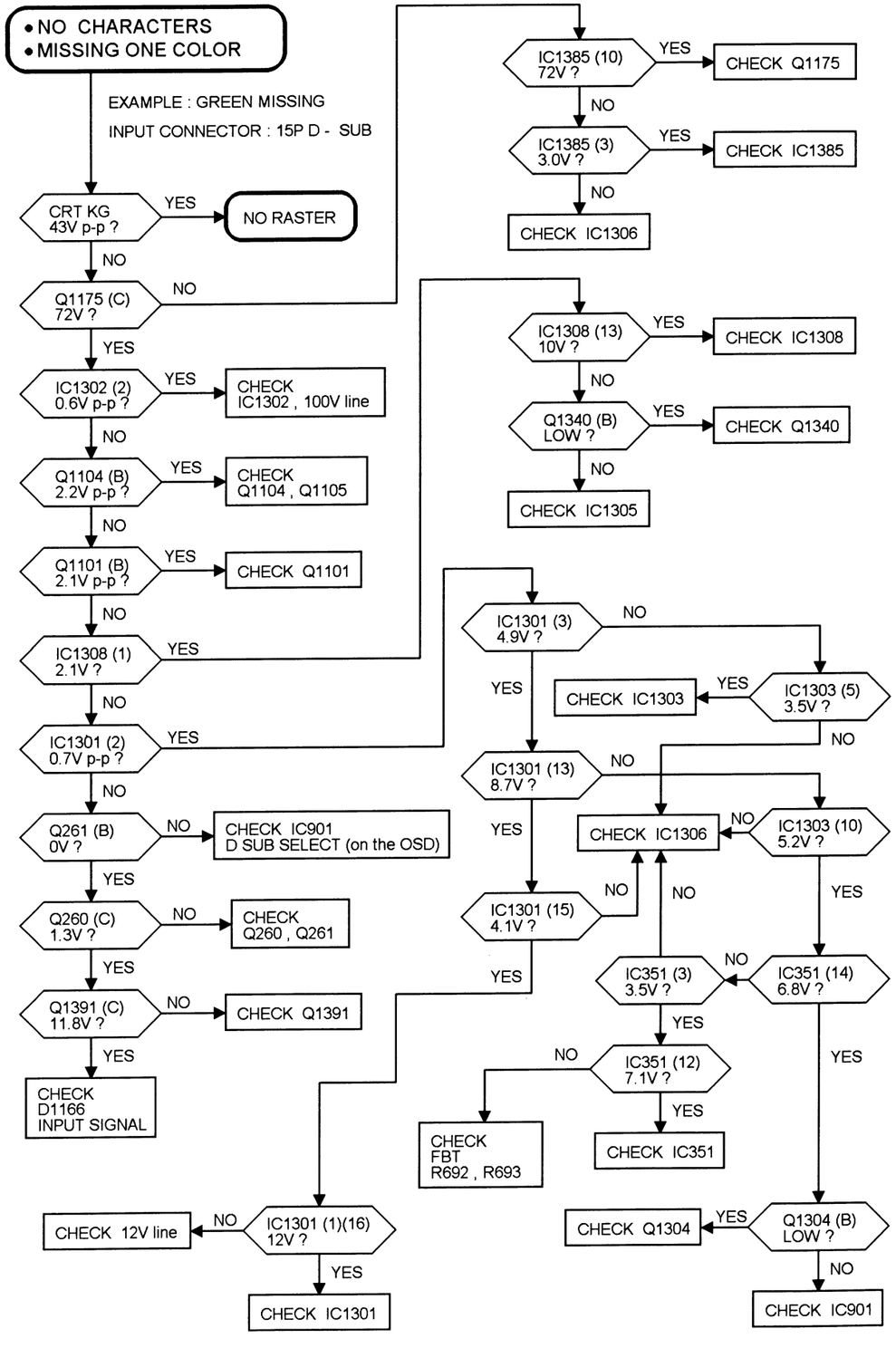
TNP890532 ⚠

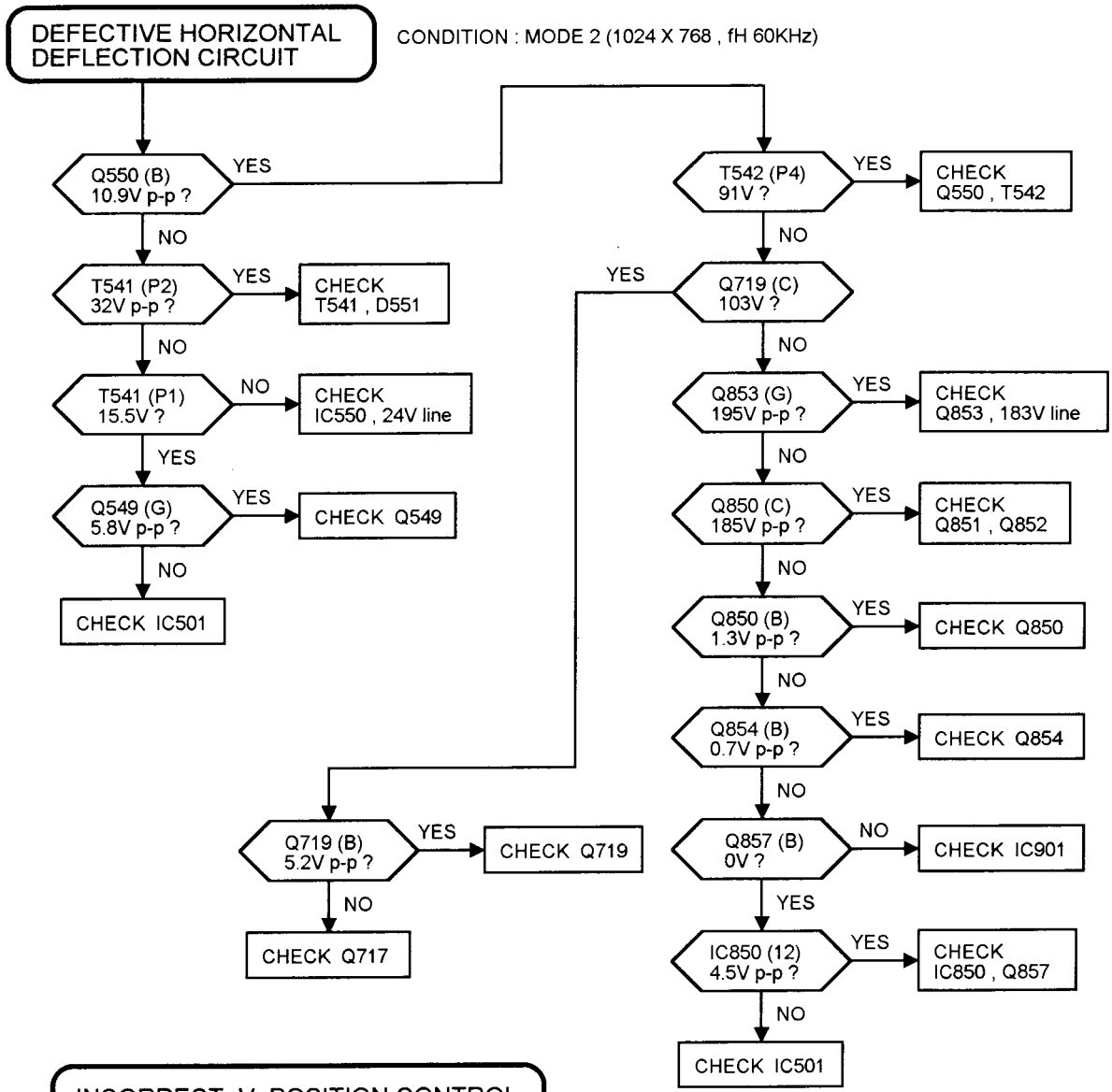

24V
12V
HEATER2
5V
C109
R111 2.7K
R113 2.7K
R114 2.7
C108 4.7 50V
R108 1.74K ±1%
C112 0.33
R109 3.32K ±1%
R102 69.8K ±1%
R106 680
C101 0.01
R101 60.4K ±1%
R103 37.4K ±1%
R105 1K
C106 0.33
IC101 LM324M
3.3V
VCC
GND
2.1V
2.2V
2.5V
Q103 2SD1994ARS
4.2V
Q104 2SB1322ARS
3.5V
Q101 2SD1994ARS
Q102 2SB1322ARS
3.1V
C107 4.7 50V
N101
TILT COIL
TLK8568007T
N382A
G2-B
G2_DEGAUSS_B
DAF
H_DAF_B
V_DAF_B
Z_AXIS
DAF_GAIN_V
DAF_POSI_V
H_PULSE2
R371 6.8K
R361 5.6K
R372 2.2K
R375 2.2K
R369 10K
C362
C370 0.01
C371 100 16V
R382 12.1K ±1%
R381 8.25K ±1%
C375 33 16V
C377 56P
C391 10 50V
C373 0.033
C372 0.022
R376 2K ±1%
R377 51
C374 0.39
C376 0.15
R385 3.3K
D371 MA8062L
C378 33 25V
R386 2.7K
1.3V
V4 VD1 VD2 VC VVCC VP VHOL VV2 VSAW VGND VG VA1 VA2 VOUT
IC301 TVS1093
HGND V6 HD1 HD2 HC HP HHOL HV2 HSAW HVCC HG HA1 HA2 HOUT
R378 1.0K ±1%
C380 82P
R379 51
C381 33P
C382 0.01
C392 1000P
C383 1 50V
C384 56P
C385 0.056
R391 5.6K
D372
C363
C379 1 50V
R364 1.96K ±1%
R368 10K
R383 4.02K ±1%
R373 6.81K ±1%
Q321 XDC114E
VS
DAF_POSI_H
DAF_GAIN_H
R362 3.9K
R374 6.8K
10.4Vp-p
5Vp-p
2Vp-p
3Vp-p
6.9Vp-p
3.8Vp-p
12V
VCC
GND
IC302 LM837M
6.6V
R388 53.5K ±1%
R389 23.2K ±1%
C367 0.01
C327 15P
R354 12K
R349 10K ±1%
R350 13.7K ±1%
C326 0.01
C331 0.1
C330 2.2 50V
R356 56K
R312 5.62K ±1%
C328 0.01
C329 10 50V
C306 47 16V
D309
R353 5.9K ±1%
R315 15.0K ±1%
R314 2.21K ±1%
R390 12K
C388 0.01
C319 0.047
R319 820
R316 100K 1W
R317 100K 1W
R318 430K
R318A 430K
C318 150P 500V
Q319 2SC4620
TP301
572Vp-p
258Vp-p
S301 TAGDSP751N
S302 TAGDSP751N
C323 1000P 1KV
R322 1K
C325 0.01
R326 33K
R325 2.2K
R323 100
557V
R327 470K 1/2W
R328 560K 1/2W
R329 470K 1/2W
Q305 2SA1872
Q307 2SC4943
Q306 2SA1872
R321 10K 1/2W
R324 180
Q304 2SC4943
12V
C321 0.1
C337 100P
R345 100K
R351 100K 1/2W
R352 100K 1/2W
R357 100K 1/2W
Q302 2SD1819AQR
Q301 2SD1819AQR
R341
R340 12K
R344 3.3K
R343 2.7K
R342 680
C322 3300P
D451
IC462 BX8318A
4.6Vp-p
4.3Vp-p
R420 8.66K ±1%
R421 511 ±1%
R456 2.2K
R457 2.2K
R458 8.2K
R459 158K ±1%
VID_MOIRE_G
RAS_MOIRE_G
VS
HS
VID_MOIRE_ON
RAS_MOIRE_ON
VID_MOIRE_D
RAS_MOIRE_D

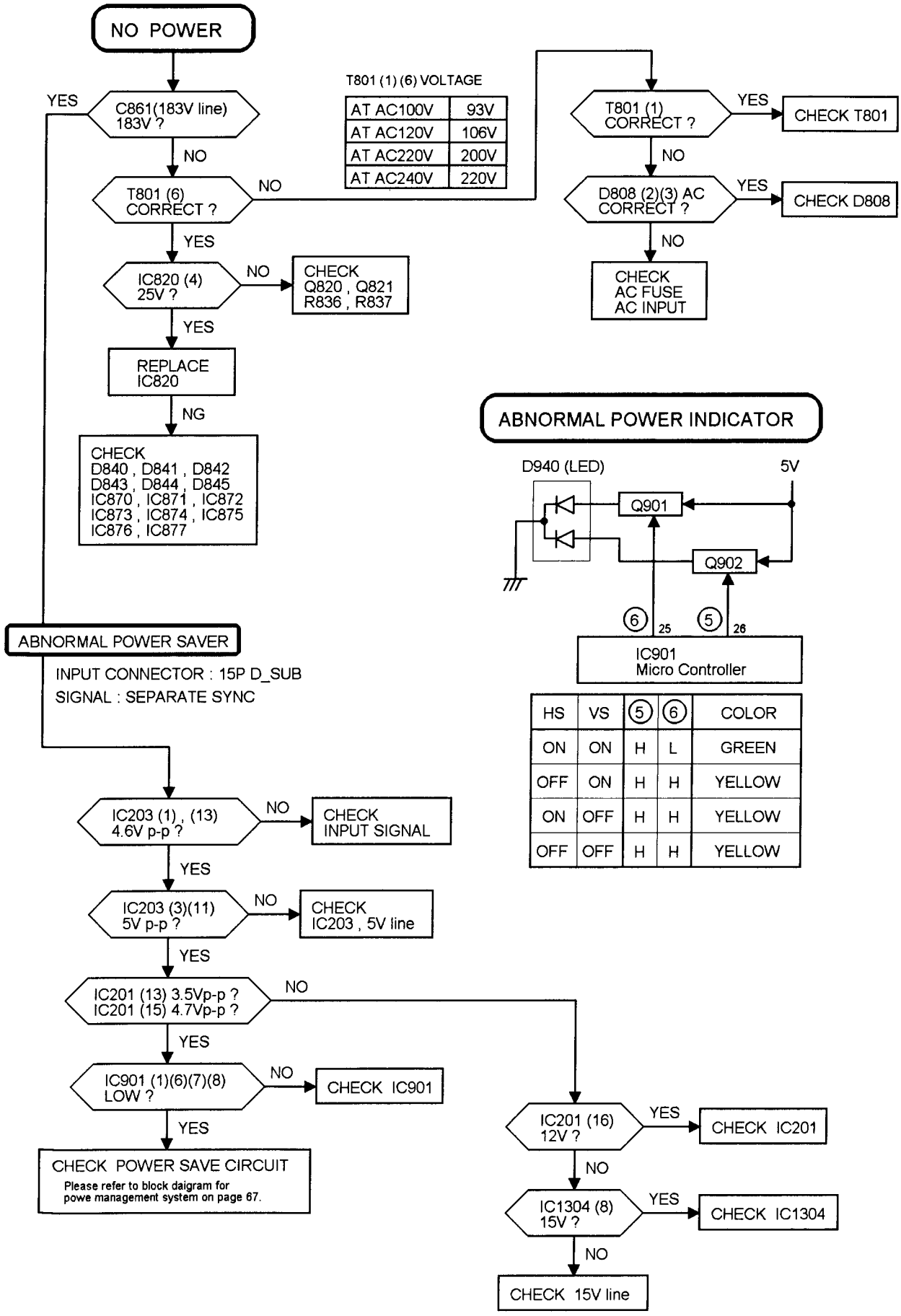
TNP890532 ⚠

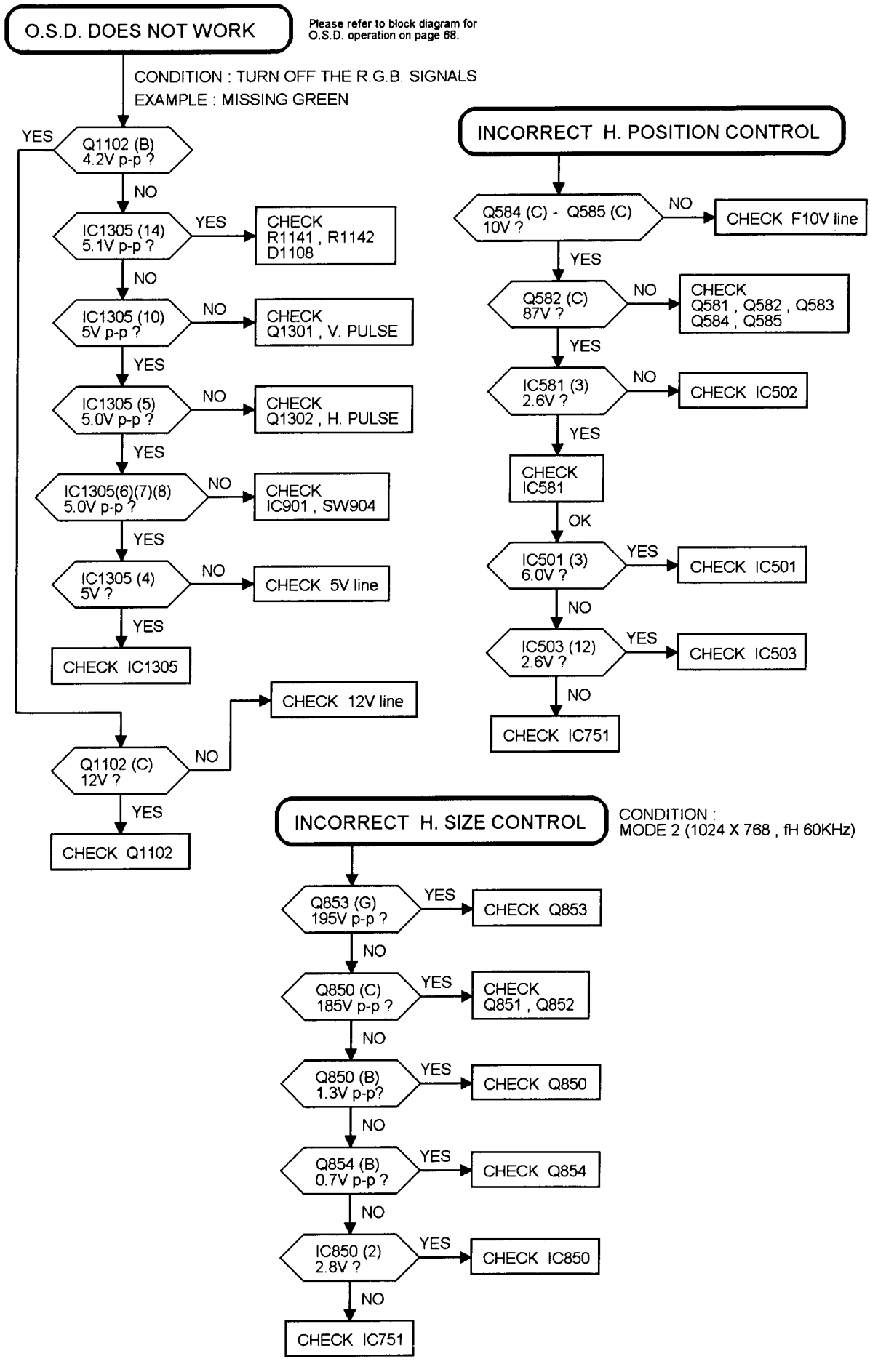
TROUBLE SHOOTING HINTS






DEFECTIVE HORIZONTAL DEFLECTION CIRCUIT
CONDITION : MODE 2 (1024 X 768 , fH 60KHz)
Q550 (B) 10.9V p-p ?
YES
NO
T541 (P2) 32V p-p ?
YES
CHECK T541 , D551
NO
T541 (P1) 15.5V ?
NO
CHECK IC550 , 24V line
YES
Q549 (G) 5.8V p-p ?
YES
CHECK Q549
NO
CHECK IC501
T542 (P4) 91V ?
YES
CHECK Q550 , T542
NO
Q719 (C) 103V ?
YES
NO
Q853 (G) 195V p-p ?
YES
CHECK Q853 , 183V line
NO
Q850 (C) 185V p-p ?
YES
CHECK Q851 , Q852
NO
Q850 (B) 1.3V p-p ?
YES
CHECK Q850
NO
Q854 (B) 0.7V p-p ?
YES
CHECK Q854
NO
Q857 (B) 0V ?
NO
CHECK IC901
YES
IC850 (12) 4.5V p-p ?
YES
CHECK IC850 , Q857
NO
CHECK IC501
Q719 (B) 5.2V p-p ?
YES
CHECK Q719
NO
CHECK Q717
INCORRECT V. POSITION CONTROL
Q494 (E) 15.0V ?
YES
CHECK R498
NO
Q494 (B) 15.5V ?
YES
CHECK Q494 , Q495
NO
IC470 (3) 7.2V ?
YES
CHECK IC470
NO
CHECK IC502
INCORRECT V. SIZE CONTROL
IC490 (4) 6.0V ?
YES
CHECK IC490
NO
Q484 (B) 1.9V ?
YES
CHECK Q484
NO
IC470 (5) 1.6V ?
YES
CHECK IC470
NO
CHECK IC751


NO POWER
C861(183V line) 183V ?
YES
NO
T801 (6) CORRECT ?
NO
YES
IC820 (4) 25V ?
NO
CHECK Q820 , Q821 R836 , R837
YES
REPLACE IC820
NG
CHECK D840 , D841 , D842 D843 , D844 , D845 IC870 , IC871 , IC872 IC873 , IC874 , IC875 IC876 , IC877
T801 (1) (6) VOLTAGE
AT AC100V 93V
AT AC120V 106V
AT AC220V 200V
AT AC240V 220V
T801 (1) CORRECT ?
YES
CHECK T801
NO
D808 (2)(3) AC CORRECT ?
YES
CHECK D808
NO
CHECK AC FUSE AC INPUT
ABNORMAL POWER INDICATOR
D940 (LED)
5V
Q901
Q902
6
25
5
26
IC901 Micro Controller
HS VS 5 6 COLOR
ON ON H L GREEN
OFF ON H H YELLOW
ON OFF H H YELLOW
OFF OFF H H YELLOW
ABNORMAL POWER SAVER
INPUT CONNECTOR : 15P D_SUB
SIGNAL : SEPARATE SYNC
IC203 (1) , (13) 4.6V p-p ?
NO
CHECK INPUT SIGNAL
YES
IC203 (3)(11) 5V p-p ?
NO
CHECK IC203 , 5V line
YES
IC201 (13) 3.5Vp-p ? IC201 (15) 4.7Vp-p ?
NO
YES
IC901 (1)(6)(7)(8) LOW ?
NO
CHECK IC901
YES
CHECK POWER SAVE CIRCUIT
Please refer to block daigram for powe management system on page 67.
IC201 (16) 12V ?
YES
CHECK IC201
NO
IC1304 (8) 15V ?
YES
CHECK IC1304
NO
CHECK 15V line


O.S.D. DOES NOT WORK
Please refer to block diagram for O.S.D. operation on page 68.
CONDITION : TURN OFF THE R.G.B. SIGNALS
EXAMPLE : MISSING GREEN
YES
Q1102 (B) 4.2V p-p ?
NO
IC1305 (14) 5.1V p-p ?
YES
CHECK R1141 , R1142 D1108
NO
IC1305 (10) 5V p-p ?
NO
CHECK Q1301 , V. PULSE
YES
IC1305 (5) 5.0V p-p ?
NO
CHECK Q1302 , H. PULSE
YES
IC1305(6)(7)(8) 5.0V p-p ?
NO
CHECK IC901 , SW904
YES
IC1305 (4) 5V ?
NO
CHECK 5V line
YES
CHECK IC1305
Q1102 (C) 12V ?
NO
CHECK 12V line
YES
CHECK Q1102
INCORRECT H. POSITION CONTROL
Q584 (C) - Q585 (C) 10V ?
NO
CHECK F10V line
YES
Q582 (C) 87V ?
NO
CHECK Q581 , Q582 , Q583 Q584 , Q585
YES
IC581 (3) 2.6V ?
NO
CHECK IC502
YES
CHECK IC581
OK
IC501 (3) 6.0V ?
YES
CHECK IC501
NO
IC503 (12) 2.6V ?
YES
CHECK IC503
NO
CHECK IC751
INCORRECT H. SIZE CONTROL
CONDITION : MODE 2 (1024 X 768 , fH 60KHz)
Q853 (G) 195V p-p ?
YES
CHECK Q853
NO
Q850 (C) 185V p-p ?
YES
CHECK Q851 , Q852
NO
Q850 (B) 1.3V p-p?
YES
CHECK Q850
NO
Q854 (B) 0.7V p-p ?
YES
CHECK Q854
NO
IC850 (2) 2.8V ?
YES
CHECK IC850
NO
CHECK IC751

If no horizontal sync from PC, then the power save circuit becomes active.

H. SYNC DOES NOT HOLD

IC501 (1) 2.6V p-p ? — NO → CHECK R247 , C501 , C502

YES

IC501 (8) 1.5V ? — YES → CHECK IC501

NO

IC503 (10) 2.6V ? — YES → CHECK IC503

NO

CHECK IC502

If no vertical sync from PC, then the power save circuit becomes active.

V. SYNC DOES NOT HOLD

IC501 (30) 2.2V p-p ? — YES → CHECK IC501

NO

Q401 (B) 0V ? — NO → CHECK IC901 VS_OFF Signal Line

YES

CHECK R400 VS Signal Line

INCORRECT V.PCC

Q719 (B) 5.2V p-p ? — YES → CHECK Q719

NO

Q717 (B) 5.7V p-p ? — YES → CHECK Q717

NO

IC581 (5) 0.5V p-p ? — YES → CHECK IC581

NO

IC761 (2) 5.7V p-p ? — NO → CHECK Q762

YES

IC761(17) - (22) CORRECT ? — NO → CHECK IC751

YES

IC761 (17)	V_PCC_BALANCE	2.4V
IC761 (18)	V_PCC_GAIN	2.8V
IC761 (19)	V_PCC_CORNER	2.7V
IC761 (20)	PARALLELOGRAM	2.8V
IC761 (21)	TERAPEZOIDO	2.2V
IC761 (22)	V_PCC_CENTER	2.5V

IC761 (8) 12V ? — NO → CHECK 12V line

YES

CHECK IC761

BRIGHT HORIZONTAL LINE APPEARS ON THE SCREEN

IC490 (12) 53V p-p ? — YES → CHECK DY

NO

IC490 (6) 1.8V p-p ? — YES → CHECK IC490

NO

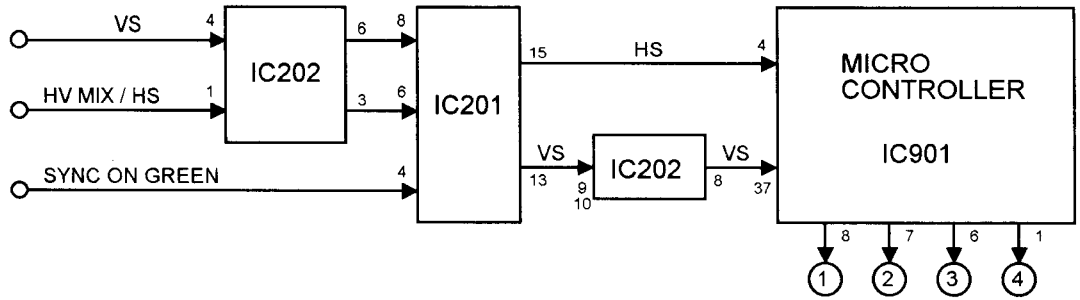
Q449 (B) 5.5V p-p ? — YES → CHECK Q449

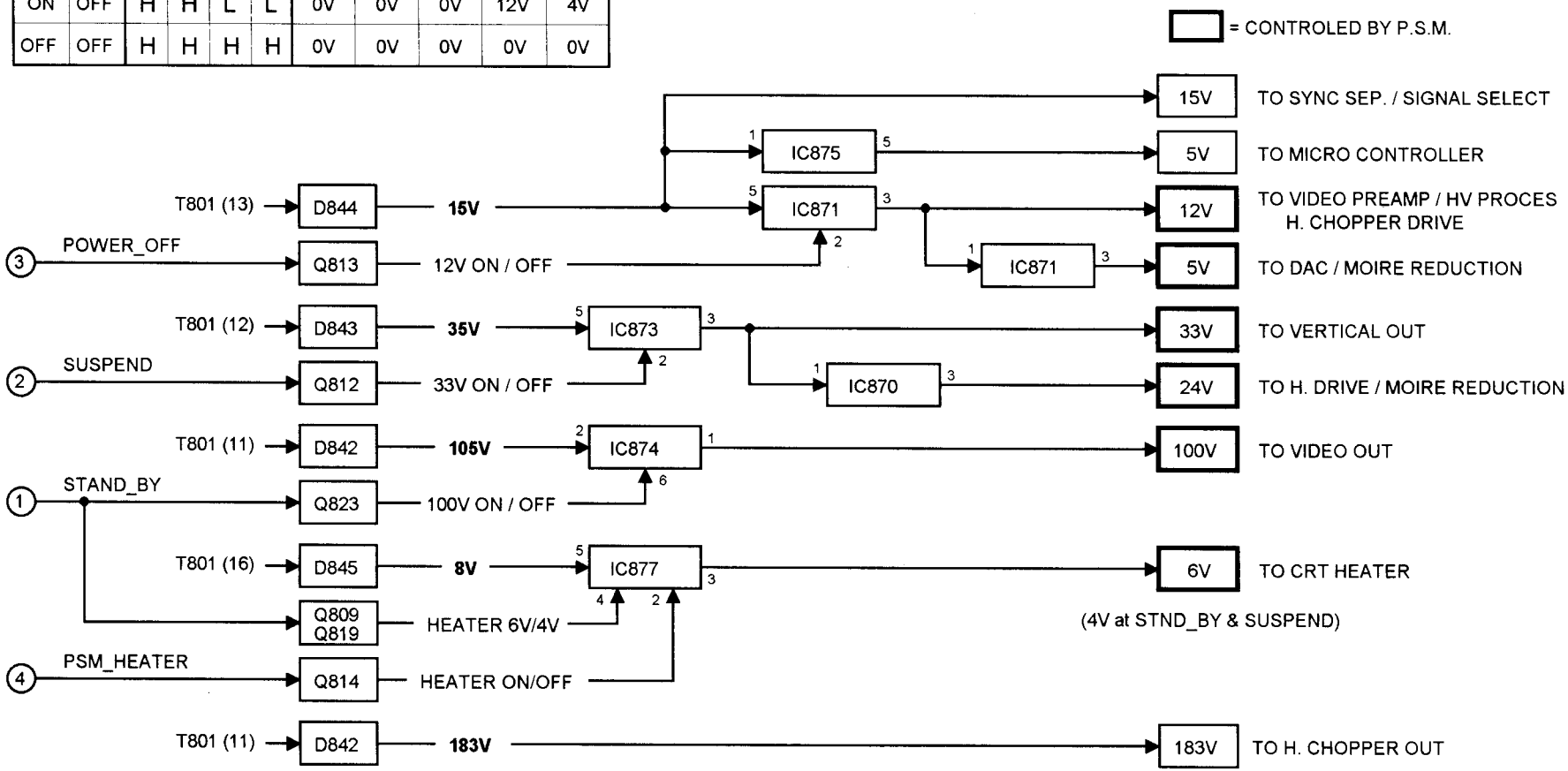
NO

CHECK IC501

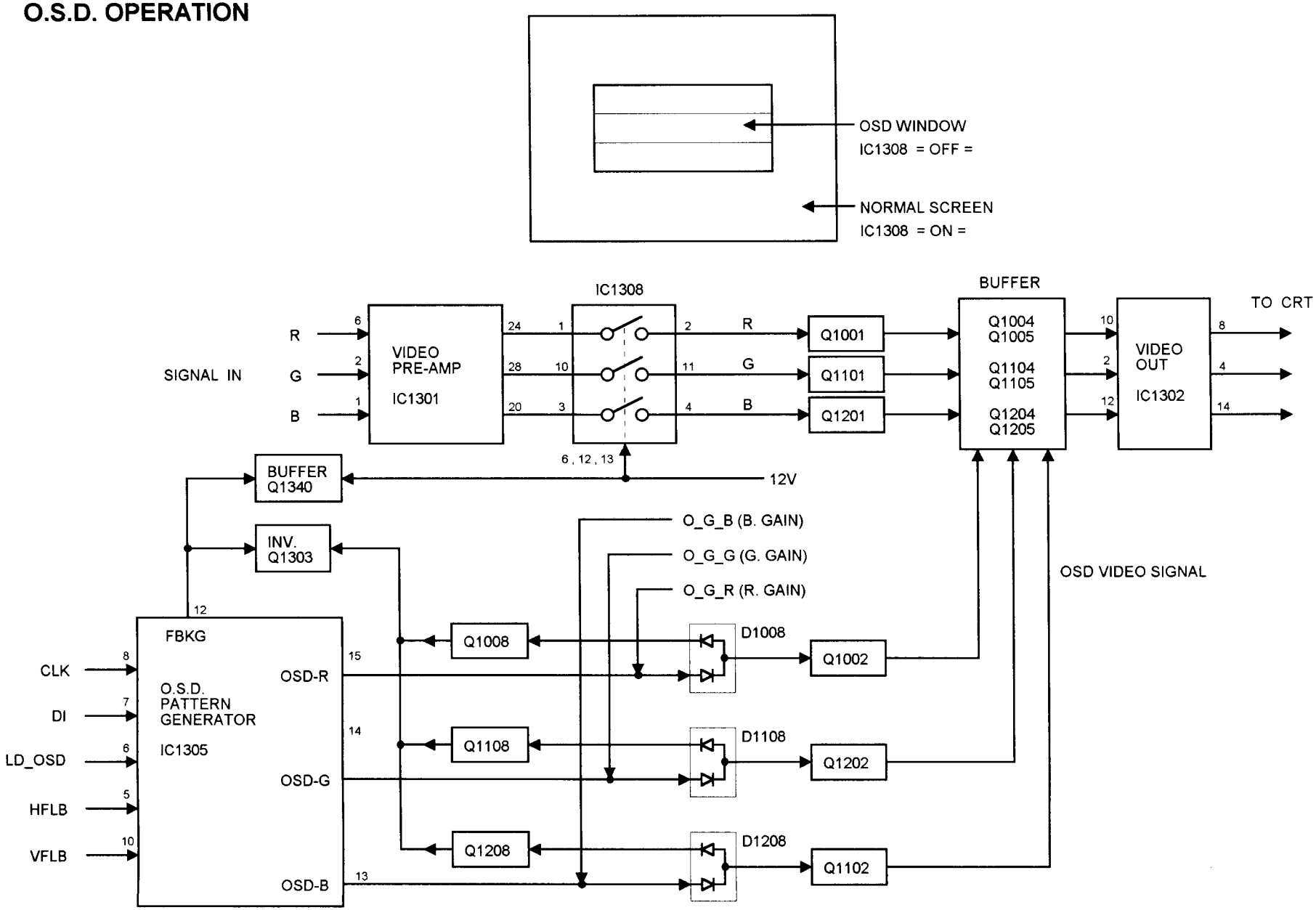
POWER SAVE MANAGEMENT

HS	VS	①	②	③	④	100V LINE	33V LINE	24V LINE	12V LINE	6V LINE
ON	ON	L	L	L	L	100V	28.5V	24V	12V	6V
OFF	ON	H	H	L	L	0V	0V	0V	12V	4V
ON	OFF	H	H	L	L	0V	0V	0V	12V	4V
OFF	OFF	H	H	H	H	0V	0V	0V	0V	0V





O.S.D. OPERATION



	Ref.No.	Part No.	Description
	35	MEY6951THB2	DEFLECTION YOKE
	36	ETC33D53NA	CONVERGENCE COIL
	37	TLK858007T	TILT COIL
⚠	38	TLK859096A3	DEGAUSS COIL
⚠		TSX8471-1	POWER CORD<NM>
⚠		TSX8484	POWER CORD<-G>
		TSX8492	POWER CORD<-SW>
⚠		TSX8493	POWER CORD<-U>
		TSX9571	SIGNAL CORD<-G,-SW>
		TSX9571-3	SIGNAL CORD<NM,-U>
		TSX9574-1	1P CONNECTOR CORD
	39	TSX9577	FLAT CORD(11P)
	40	TSX9578	FLAT CORD(9P)
	41	TSX9803	FLAT CORD(7P)
	42	TSX9990	FLAT CORD(25P)
	43	TXAJTC3P1658	3P CONNECTOR ASSY
		TXAJTC3P1659	3P CONNECTOR ASSY
		TXAJTV3P1657	3P CONNECTOR ASSY
		TXA3A12151NM	CRT EARTH LEAD
		TSN85511	MAGNET
		T4F31519Q	POLYESTER TAPE(20M)
		T4F72425Q	COTTON TAPE(55M)
		T4F90226-2	MAIRA TAPE(30M)
		TPC8551901	OUTER CARTON<NM>
		TPC8552401	OUTER CARTON<-G,-SW,-U>
		TPD353002	PAD
		TXAPD2D2131	FILLER
		TPE894011	SET COVER<NM,-SW,-U>
		TPE894011-1	SET COVER<-G>
		TQE8513	FUN BAG COVER<-U>
		TQE8513-1	FUN BAG COVER<NM,-G,-SW>
⚠		TQB820247	INSTRUCTION BOOK<NM>
⚠		TQB820261	INSTRUCTION BOOK <-G,-SW,-U>
		TQD1712010	PASS CARD<-G,-SW,-U>
		TQD8518073-1	WARRANTY CARD<-U>
		TQF80720	NHW LABEL<NM>
		TQF82880	HIGH VOLTAGE LABEL<NM>
		TQF83825-6	SERIAL NO. LABEL
		TQF85363-2	CARTON LABEL<-G>
		TQF85363-3	CARTON LABEL<-SW>
		TQF85363-4	CARTON LABEL<-U>
		TQF86550	EARTH CAUTION LABEL<-SW>
		TQF86555	AC-IN LABEL<-U>
		TQF86574	US PATENTS LABEL<NM>
		TQF86583-1	POWER CORD LABEL<-U>
⚠		TQF86608	EARTH CAUTION LABEL <NM,-G>

I.C

IC101	LM324MX	IC
IC201	M52346SP	IC
IC203	MM74HCT00MX	IC
IC204	MM74HC00MX	IC
IC301	TVS1093	IC
IC302	LM837MX	IC
IC330	LM358MX	IC
IC351	LM324MX	IC
IC459	MB88346BPFTF	IC
IC460	AN5262	IC
IC461	AN5262	IC
IC462	BX8318A	HYBRID IC
IC470	LM358MX	IC
IC476	LM358MX	IC
IC490	LA7838	IC
IC501	LA7860	IC
IC502	MB88346BPFTF	IC
IC503	LM324MX	IC
IC550	AN6531	IC
IC581	LM358MX	IC
IC635	LM339MX	IC
IC660	TVS1103	IC
IC751	MB88346BPFTF	IC
IC761	AN5766K-A	IC
IC820	STR-S6533	HYBRID IC
IC850	TVS1103	IC
IC870	M5F7824L	IC
IC871	SI-3120CA	HYBRID IC
IC872	M5F7805L	IC
IC873	SI-3240CA	HYBRID IC
IC874	STR-S3081	HYBRID IC
IC875	SI-3090C	HYBRID IC
IC876	L78LR05C	IC
IC877	SI-3025F	HYBRID IC
IC901	TVC80218-1	IC
IC902	24LC08BTISN	IC
IC904	EXBF5E563J	RR COMBINATION
IC1301	M52326SP	IC
IC1302	VEY09P-Y2	HYBRID IC
IC1303	LM324MX	IC
IC1304	LM2931CMX	IC
IC1305	MC141540P4	IC
IC1306	MB88346BPFTF	IC
IC1308	MM74HC4066MX	IC
IC1385	STK190-050	HYBRID IC

TRANSISTORS

Q101	2SD1994AR	TRANSISTOR
Q102	2SB1322AR	TRANSISTOR
Q103	2SD1994AR	TRANSISTOR
Q104	2SB1322AR	TRANSISTOR
Q250	XDC114EU	TRANSISTOR
Q251	XDA114EU	TRANSISTOR
Q260	XDA114EU	TRANSISTOR
Q261	XDC114EU	TRANSISTOR
Q295	2SC4632RB7LB	TRANSISTOR
Q299	2SC3938R	TRANSISTOR
Q301	2SD1819AQ	TRANSISTOR
Q302	2SD1819AQ	TRANSISTOR
Q304	2SC4943RB7LB	TRANSISTOR
Q305	2SA1872RB7LB	TRANSISTOR
Q306	2SA1872RB7LB	TRANSISTOR
Q307	2SC4943RB7LB	TRANSISTOR
Q319	2SC4620V25	TRANSISTOR
Q321	XDC114EU	TRANSISTOR
Q330	2SB1220R	TRANSISTOR
Q331	2SB1220R	TRANSISTOR
Q332	XDC114EU	TRANSISTOR
Q401	XDC114EU	TRANSISTOR
Q442	2SC3938R	TRANSISTOR
Q449	XDC114EU	TRANSISTOR
Q470	2SD1819AQ	TRANSISTOR
Q472	2SD1819AQ	TRANSISTOR
Q484	2SD1819AQ	TRANSISTOR

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the International symbol ⚠ have special characteristics important for safety. When replacing any of these components use only manufacture's specified parts.

RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1%
F	Fuse	J	± 5%
M	Metal Oxide	K	± 10%
S	Solid	M	± 20%
W	Wire Wound	G	± 2%

Example: Part No. ERD25TJ104 (C) Description 100K (J) 1/4W

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	± 0.25pF
E	Electrolytic	D	± 0.5pF
P	Polyester	F	± 1pF
S	Styrol	J	± 5%
T	Tantalum	K	± 10%
PP	Polypropylene	L	± 15%
		M	± 20%
		P	+100% – 0%
		Z	+80% – 20%

Example: Part No. ECKF1H103ZF (C) Description 0.01μF (Z) 50V

	Ref.No.	Part No.	Description
		CABINET & MAIN PARTS	
⚠	1	TKY859103	BOTTOM CABINET
⚠	2	TKE8534A04	ESCUTCHEON<NM>
⚠	2	TTE8534A04-3	ESCUTCHEON<-G,-SW,-U>
⚠	3	TKU894106-1H	REAR COVER W/MODEL PLATE <NM>
⚠	3	TKU894106-3H	REAR COVER W/MODEL PLATE <-G>
	3	TKU894106-4H	REAR COVER W/MODEL PLATE <-SW>
⚠	3	TKU894106-5H	REAR COVER W/MODEL PLATE <-U>
	4	TKX865201	SPACER RING
	5	TKX866401-1	CONTROL PANEL HOLDER
	6	TKX866901	CONTROL PANEL
	7	TKX867001	MAIN PC BOARD HOLDER
	8	TKX904902-1	CRT PCB HOLDER
	9	TKK859313	LED GUIDE
	10	TKK859740	PANEL COVER
	11	TKK859958-2	PEDESTAL
	12	TKK859961	CENTER POST
	13	TUX86189	BOTTOM PLATE
	14	TUX87719	PCB BRACKET(H-OUT)
	15	TUX87720	PCB BRACKET(VIDEO)
	16	TUC86975	SHIELD CASE(CRT)
	17	TUC87570	SHIELD CASE
	18	TUC87571	SHIELD CASE(REAR)
	19	TUC87572	SHIELD CASE(CRT PCB)
	20	TUC87573	SHIELD PLATE(CRT PCB)
⚠		TBM850519	MODEL PLATE<NM>
⚠		TBM850535	MODEL PLATE<-G>
		TBM850536-1	MODEL PLATE<-SW>
⚠		TBM850537-1	MODEL PLATE<-U>
	22	TBX8586508	KNOB(POWER SWITCH)
	23	TBX8752101	KNOB(CONTROL)
	24	TES8355	SPRING(CONTROL PANEL)
		TES8586	EARTH SPRING(SHIELD CASE)
		TES9194-4	SPRING(CRT EARTH)SIDE/TOP
	25	TES9296	SPRING(POWER SWITCH)
		TES9532	SPRING(CRT EARTH)R
		TES9533	SPRING(CRT EARTH)L
	26	TEK6935	DOOR RATCH
	50	TMM15404-1	SPACER RING
		TMM16452	TILT COIL CLAMPER
	49	TMM7464	DEGAUSS COIL CLAMPER
		TMM7468	CLAMPER
	27	TMM81416	CORD BAND(SMALL)
	28	TMM81489	CARD SPACER
	29	TMM81499	PUSH RIVET
		TMM85475	CLAMPER(BIG)
		TMM85490	LEAD CLAMPER
		TMM85576-1	CRT RUBBER
		TMM85586	RUBBER(WEDGE)
		TMK84990	SET LEG
		TMK85504	HOLDER(R)ITC
		TMK85505	HOLDER(L)ITC
		TMK85572	FERRITE STICK
	30	THT1028	SCREW(FOR CRT)
	45	XTN5+16A	SCREW
	44	XTN5+25A	SCREW
	48	XTV3+10A	SCREW
	46	XTV3+20J	SCREW
		XTV3+8G	SCREW
	47	XYA4+EF8	SCREW
	21	XYE3+EJ10	SCREW
⚠	31	M51KYY140X	PICTURE TUBE
	32	TNP800962-21	PC BOARD W/COMPONENT (VIDEO-INPUT/CRT)
	33	TNP800963-21	PC BOARD W/COMPONENT (H-OUT/KBD/SW/LED)
⚠	34	TNP890532-21	PC BOARD W/COMPONENT (MAIN)

Ref.No.	Part No.	Description
Q494	2SD1994AQ	TRANSISTOR
Q495	2SB1413R	TRANSISTOR
Q549	2SK2015	TRANSISTOR
Q550	2SC4288ARL	TRANSISTOR
Q560	XDC114EU	TRANSISTOR
Q561	2SK2255F122	TRANSISTOR
Q562	XDC114EU	TRANSISTOR
Q563	2SK2255F122	TRANSISTOR
Q564	XDC114EU	TRANSISTOR
Q565	2SK2255F122	TRANSISTOR
Q571	2SD1819AQ	TRANSISTOR
Q581	2SB1546P	TRANSISTOR
Q582	2SB1546P	TRANSISTOR
Q583	2SC4212H	TRANSISTOR
Q584	2SD2133S	TRANSISTOR
Q585	2SB1413S	TRANSISTOR
Q630	2SC3938R	TRANSISTOR
Q644	2SD1820AR	TRANSISTOR
Q645	2SB1219Q	TRANSISTOR
Q672	2SC3938R	TRANSISTOR
Q673	XDC114EU	TRANSISTOR
Q674	2SC4212H	TRANSISTOR
Q675	2SD874AR	TRANSISTOR
Q676	2SB766AQ	TRANSISTOR
Q680	IRFI634G	TRANSISTOR
Q690	IRFPF50	TRANSISTOR
Q717	2SC1473QNC	TRANSISTOR
Q719	2SD1641	TRANSISTOR
Q762	XDC114EU	TRANSISTOR
Q805	2SB1220R	TRANSISTOR
Q809	2SC3938R	TRANSISTOR
Q810	2SD814AQ	TRANSISTOR
Q811	XDC114EU	TRANSISTOR
Q812	XDC114EU	TRANSISTOR
Q813	XDC114EU	TRANSISTOR
Q814	XDC114EU	TRANSISTOR
Q815	2SB1220R	TRANSISTOR
Q816	XDC114EU	TRANSISTOR
Q820	2SC4620V25	TRANSISTOR
Q821	2SD1992AR	TRANSISTOR
Q822	2SC4620V25	TRANSISTOR
Q823	2SD814AQ	TRANSISTOR
Q824	2SD1820AR	TRANSISTOR
Q825	2SB1220R	TRANSISTOR
Q850	2SC4212H	TRANSISTOR
Q851	2SD874AR	TRANSISTOR
Q852	2SB766AQ	TRANSISTOR
Q853	IRFI634G	TRANSISTOR
Q854	2SC3938R	TRANSISTOR
Q855	XDC114EU	TRANSISTOR
Q856	XDC114EU	TRANSISTOR
Q857	XDC114EU	TRANSISTOR
Q901	XDA114EU	TRANSISTOR
Q902	XDA114EU	TRANSISTOR
Q903	XDC114EU	TRANSISTOR
Q1001	2SC4453	TRANSISTOR
Q1002	2SC3938R	TRANSISTOR
Q1004	2SC4453	TRANSISTOR
Q1005	2SA1764	TRANSISTOR
Q1008	2SC3938R	TRANSISTOR
Q1075	2SC1473QNC	TRANSISTOR
Q1101	2SC4453	TRANSISTOR
Q1102	2SC3938R	TRANSISTOR
Q1104	2SC4453	TRANSISTOR
Q1105	2SA1764	TRANSISTOR
Q1108	2SC3938R	TRANSISTOR
Q1175	2SC1473QNC	TRANSISTOR
Q1201	2SC4453	TRANSISTOR
Q1202	2SC3938R	TRANSISTOR
Q1204	2SC4453	TRANSISTOR
Q1205	2SA1764	TRANSISTOR
Q1208	2SC3938R	TRANSISTOR
Q1275	2SC1473QNC	TRANSISTOR
Q1301	XDC114EU	TRANSISTOR
Q1302	XDC114EU	TRANSISTOR
Q1303	2SC3938R	TRANSISTOR
Q1304	XDC114EU	TRANSISTOR
Q1340	2SA1764	TRANSISTOR
Q1381	XDA114EU	TRANSISTOR
Q1390	2SA1309AQ	TRANSISTOR
Q1391	XDA114EU	TRANSISTOR
Q1392	XDC114EU	TRANSISTOR

DIODES

D204	MA142K	DIODE
D205	MA8056M	DIODE
D207	MA8051M	DIODE
D242	MA8056M	DIODE
D243	MA142K	DIODE
D245	MA142K	DIODE
D246	MA142K	DIODE
D247	MA142K	DIODE
D250	MA8056M	DIODE
D251	MA8056M	DIODE
D252	MA8056M	DIODE
D253	MA8056M	DIODE
D254	MA8056M	DIODE
D255	MA111	DIODE
D256	MA8047M	DIODE
D302	MA8082L	DIODE
D303	MA142K	DIODE
D304	MA111	DIODE
D330	HZT33-09TD	DIODE
D331	HZT33-09TD	DIODE
D334	MA28T-A	DIODE
D337	EU02Z	DIODE
D338	EU02Z	DIODE
D353	MA8150M	DIODE
D371	MA8062L	DIODE
D381	TAX125X103MA	VARISTOR
D382	ERZC05DK201U	VARISTOR
D441	MA111	DIODE
D443	MA8270M	DIODE
D445	MA111	DIODE
D446	MA111	DIODE
D447	MA111	DIODE
D449	MA8056M	DIODE
D482	MA728	DIODE
D485	TVSRD18EB2	DIODE
D486	ERA1502	DIODE
D488	TVSRD10FB2	DIODE
D489	MA1360M	DIODE
D497	MA30WA	DIODE
D502	MA728	DIODE

	Ref.No.	Part No.	Description		Ref.No.	Part No.	Description
	D539	MA8047M	DIODE		D875	MA8360H	DIODE
	D550	FMP-G3FSLF	DIODE		D876	MA8360H	DIODE
	D551	ERA81004	DIODE		D877	MA8150M	DIODE
	D552	MA111	DIODE		D901	MA111	DIODE
	D553	MA8150M	DIODE		D902	MA8047M	DIODE
	D571	MA111	DIODE		D905	MA8056M	DIODE
	D581	MA142K	DIODE		D907	MA8056M	DIODE
	D601	RU1P	DIODE		D912	MA8056M	DIODE
	D602	MA167	DIODE		D913	MA8056M	DIODE
	D604	EU02Z	DIODE		D914	MA8056M	DIODE
	D606	MA111	DIODE		D915	MA8056M	DIODE
	D608	RU1P	DIODE		D940	GL8ED5	DIODE(LED)
	D610	RD82P	DIODE		D941	1SS133	DIODE
	D611	RD82P	DIODE		D942	1SS133	DIODE
	D635	MA8150M	DIODE		D946	MA142WK	DIODE
	D652	MA8051M	DIODE		D947	MA8056M	DIODE
	D661	MA8150M	DIODE		D950	MA8056M	DIODE
	D662	MA8130H	DIODE		D951	MA8056M	DIODE
	D666	MA111	DIODE		D953	MA8056M	DIODE
	D667	MA111	DIODE		D954	MA8056M	DIODE
	D668	MA111	DIODE		D955	MA8056M	DIODE
	D669	MA111	DIODE		D956	MA8056M	DIODE
	D672	MA30A	DIODE		D957	MA8056M	DIODE
	D674	ERA18-04	DIODE		D958	MA8056M	DIODE
	D680	MA8150M	DIODE		D960	MA8056M	DIODE
	D681	CB903-4	DIODE		D961	MA8056M	DIODE
	D690	MA8200H	DIODE		D962	MA8056M	DIODE
	D695	MA4130H	DIODE		D963	MA8056M	DIODE
	D714	MA142K	DIODE		D1001	DCC010	DIODE
	D715	MA143A	DIODE		D1006	MA199	DIODE
	D716	MA142K	DIODE		D1007	MA199	DIODE
	D717	MA28T-A	DIODE		D1008	MA147	DIODE
	D719	EM01Z	DIODE		D1054	MA142K	DIODE
⚠	D801	ERZVEAV431	VARISTOR		D1055	MA142K	DIODE
⚠	D803	ERZVEAV431	VARISTOR		D1057	MA142K	DIODE
	D804	SM3JZ47LB181	DIODE		D1058	MA142K	DIODE
	D807	EG01Z	DIODE		D1064	MA142K	DIODE
	D808	RBV406M	DIODE		D1066	MA142K	DIODE
	D809	MA111	DIODE		D1075	MA167A	DIODE
	D810	MA8240M	DIODE		D1101	DCC010	DIODE
	D817	MA8200L	DIODE		D1106	MA199	DIODE
	D821	RG2A2	DIODE		D1107	MA199	DIODE
	D840	ERB93-02	DIODE		D1108	MA147	DIODE
	D841	ESAC39M06ES	DIODE		D1154	MA142K	DIODE
	D842	ERC3806	DIODE		D1155	MA142K	DIODE
	D843	CB903-4	DIODE		D1157	MA142K	DIODE
	D844	RL4Z	DIODE		D1158	MA142K	DIODE
	D845	ERC9102L	DIODE		D1164	MA142K	DIODE
	D846	MA8068M	DIODE		D1166	MA142K	DIODE
	D847	MA8220L	DIODE		D1175	MA167A	DIODE
	D850	MA111	DIODE		D1201	DCC010	DIODE
	D851	MA111	DIODE		D1206	MA199	DIODE
	D852	MA111	DIODE		D1207	MA199	DIODE
	D853	ERA18-04	DIODE		D1208	MA147	DIODE
	D854	MA30A	DIODE		D1254	MA142K	DIODE
	D855	MA8150M	DIODE		D1255	MA142K	DIODE
	D856	CB903-4	DIODE		D1257	MA142K	DIODE
	D857	MA8075H	DIODE		D1258	MA142K	DIODE
	D871	MA8360M	DIODE		D1264	MA142K	DIODE
	D872	MA8360M	DIODE		D1266	MA142K	DIODE
	D873	MA8360M	DIODE		D1275	MA167A	DIODE
	D874	MA8360H	DIODE		D1303	MA8056M	DIODE

	Ref.No.	Part No.	Description
	D1304	MA8056M	DIODE
	D1305	MA8056M	DIODE
	D1306	MA8056M	DIODE
	D1307	MA8056M	DIODE
	D1311	MA8056M	DIODE
	D1340	MA8082L	DIODE
	D1380	HZT33-09TD	DIODE
	D1381	HZT33-09TD	DIODE
	D1382	HZT33-09TD	DIODE
	D1383	HZT22	DIODE
	D1385	MA4082NM	DIODE
	D1386	MA8150M	DIODE
	D1395	MA4082NM	DIODE
	D1401	MA111	DIODE
	D1402	MA704	DIODE
		COIL & TRANSFORMERS	
	L381	TSK8029	FERRITE CORE
	L383	TSK8029	FERRITE CORE
	L464	ELEY561KA	PEAKING COIL
	L521	ELEY470KA	PEAKING COIL
	L550	EXCELSR35S	LC COMBINATION
	L551	EXCELSR35S	LC COMBINATION
	L573	ELHKLB014B	COIL
	L574	ELHKLB014B	COIL
	L575	TLH85815T	COIL
	L599	TLUACNB821K	PEAKING COIL
	L680	EXCELDR35C	LC COMBINATION
	L681	TLP85708R	CHOKE COIL
	L751	ELEY561KA	PEAKING COIL
⚠	L801	ELF18D650C	LINE FILTER
⚠	L802	ELF18D656Z	LINE FILTER
	L806	TSK8031	FERRITE CORE
	L821	EXCELDR35C	LC COMBINATION
	L822	EXCELDR35C	LC COMBINATION
	L823	EXCELDR35C	LC COMBINATION
	L824	EXCELDR35C	LC COMBINATION
	L840	EXCELDR35C	LC COMBINATION
	L844	EXCELDR35C	LC COMBINATION
	L845	EXCELDR35C	LC COMBINATION
	L850	TLP85708R	CHOKE COIL
	L851	EXCELDR35C	LC COMBINATION
	L852	EXCELDR35C	LC COMBINATION
	L853	EXCELDR35C	LC COMBINATION
	L1001	ELEXHR47KA	PEAKING COIL
	L1051	TSK8031	FERRITE CORE
	L1061	TSK8031	FERRITE CORE
	L1101	ELEXHR47KA	PEAKING COIL
	L1102	ELJNAR22KB	CHIP COIL
	L1151	TSK8031	FERRITE CORE
	L1161	TSK8031	FERRITE CORE
	L1175	TSK8029	FERRITE CORE
	L1201	ELEXHR47KA	PEAKING COIL
	L1251	TSK8031	FERRITE CORE
	L1261	TSK8031	FERRITE CORE
	L1301	ELEXH100KA	PEAKING COIL
	L1302	TLUACNB821K	PEAKING COIL
	L1303	EXCELDR35C	LC COMBINATION
	L1304	EXCELDR35C	LC COMBINATION
	L1305	EXCELDR35C	LC COMBINATION
	L1306	TSK8029	FERRITE CORE
	L1308	ELEXH151KA	PEAKING COIL

	Ref.No.	Part No.	Description
	T541	TLH8540Z	COIL
	T542	TLH8550Z1	COIL
⚠	T601	ETF42L28AZ	FLYBACK TRANS.
⚠	T801	ETS42AF135ND	TRANS.
		CAPACITORS	
	C101	ECUX1H103KBG	C 0.01UF K 50V
	C106	ECUX1E334ZFW	C 0.33UF Z 25V
	C107	ECEA1HGE4R7	E 4.7UF 50V
	C108	ECEA1HGE4R7	E 4.7UF 50V
	C112	ECUX1E334ZFW	C 0.33UF Z 25V
	C201	ECQV1H474JM	P 0.47UF J 50V
	C202	ECEA1HGE010	E 1UF 50V
	C203	ECEA1HGE010	E 1UF 50V
	C204	ECUX1H472KBG	C 4700PF K 50V
	C205	ECUX1H103KBG	C 0.01UF K 50V
	C207	ECEA1HGE2R2	E 2.2UF 50V
	C208	ECEA1HGE2R2	E 2.2UF 50V
	C209	ECUX1H333KBX	C 0.033UF K 50V
	C210	ECUX1H102KBN	C 1000PF K 50V
	C211	ECUX1H102KBN	C 1000PF K 50V
	C212	ECEA1CGE101	E 100UF 16V
	C213	ECUX1H102KBN	C 1000PF K 50V
	C214	ECQV1H474JM	P 0.47UF J 50V
	C215	ECEA1CGE101	E 100UF 16V
	C242	ECUX1H103KBG	C 0.01UF K 50V
	C243	ECUX1H103KBG	C 0.01UF K 50V
	C244	ECUX1H103KBG	C 0.01UF K 50V
	C298	ECEA1CGE470	E 47UF 16V
	C299	ECUX1H103KBG	C 0.01UF K 50V
	C306	ECEA1CGE470	E 47UF 16V
	C308	ECUX1H103KBG	C 0.01UF K 50V
	C309	ECUX1H103KBG	C 0.01UF K 50V
	C318	ECKD2H151KB5	C 150PF K 500V
	C319	ECQV1H473JM	P 0.047UF J 50V
	C321	ECUX1H104ZFX	C 0.1UF Z 50V
	C322	ECYX1H332JCW	C 3300PF J 50V
	C323	ECKD3A102JBP	C 1000PF J 1KV
	C325	ECKF1H103ZF	C 0.01UF Z 50V
	C326	ECUX1H103KBG	C 0.01UF K 50V
	C327	ECCF1H150JC	C 15PF J 50V
	C328	ECUX1H103KBG	C 0.01UF K 50V
	C329	ECEA1HGE100	E 10UF 50V
	C330	ECEA1HGE2R2	E 2.2UF 50V
	C331	ECUX1H104ZFX	C 0.1UF Z 50V
	C337	ECUX1H101JCG	C 100PF J 50V
	C339	ECQE2104KF	P 0.1UF K 200V
	C351	ECUX1H103KBG	C 0.01UF K 50V
	C370	ECUX1H103KBG	C 0.01UF K 50V
	C371	ECEA1CGE101	E 100UF 16V
	C372	ECQB1H223JF	P 0.022UF J 50V
	C373	ECQB1H333JF	P 0.033UF J 50V
	C374	ECQV1H394JM	P 0.39UF J 50V
	C375	ECEA1CGE330	E 33UF 16V
	C376	ECQV1H154JM	P 0.15UF J 50V
	C377	ECUX1H560JCG	C 56PF J 50V
	C378	ECEA1EGN330	E 33UF 25V
	C379	ECEA1HGE010	E 1UF 50V
	C380	ECUX1H820JCG	C 82PF J 50V
	C381	ECUX1H330JCG	C 33PF J 50V
	C382	ECUX1H103KBG	C 0.01UF K 50V
	C383	ECEA1HGE010	E 1UF 50V

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
C384	ECUX1H560JCG	C	56PF	J	50V	C530	ECUX1H151JCG	C	150PF	J	50V
C385	ECQB1H563JF	P	0.056UF	J	50V	C531	ECUX1H103KBG	C	0.01UF	K	50V
C387	ECUX1H103KBG	C	0.01UF	K	50V	C532	ECEA1CGE101	E	100UF		16V
C388	ECUX1H103KBG	C	0.01UF	K	50V	C533	ECUX1H332KBN	C	3300PF	K	50V
C390	ECKD2H101KB5	C	100PF	K	500V	C550	ECEA1VGE101	E	100UF		35V
C391	ECEA1HGE100	E	10UF		50V	C551	ECEA1VGE101	E	100UF		35V
C392	ECUX1H102JCX	C	1000PF	J	50V	C552	ECKD2H332KB5	C	3300PF	K	500V
C393	ECKD3D272KBP	C	2700PF	K	2KV	C553	ECWH15H222HN	PP	2200PF	H	1.5KV
C394	ECQE10473KF	P	0.047UF	K	1KV	C554	ECWH15H222HN	PP	2200PF	H	1.5KV
C395	ECUX1H102KBN	C	1000PF	K	50V	C555	ECQE2335KF	P	3.3UF	K	200V
C401	ECUX1H220JCN	C	22PF	J	50V	C561	ECWF2H125HDB	PP	1.2UF	H	500V
C402	ECEA1HGE010	E	1UF		50V	C563	ECWF2H364HDB	PP	0.36UF	H	200V
C403	ECQV1H104JM	P	0.1UF	J	50V	C565	ECWF2H184HDP	PP	0.18UF	H	500V
C404	ECQB1H123JF	P	0.012UF	J	50V	C568	ECWF4304HBP	PP	0.3UF	H	400V
C405	ECUX1H102KBN	C	1000PF	K	50V	C573	ECKD2H102KB5	C	1000PF	K	500V
C442	ECUX1H221KBN	C	220PF	K	50V	C574	ECKD2H102KB5	C	1000PF	K	500V
C459	ECEA0JGE471	E	470UF		6.3V	C575	ECUX1C474ZFX	C	0.47UF	Z	16V
C460	ECEA1CGE470	E	47UF		16V	C576	ECUX1C474ZFX	C	0.47UF	Z	16V
C461	ECEA1HGE330	E	33UF		50V	C577	ECUX1C474ZFX	C	0.47UF	Z	16V
C462	ECEA1HGE330	E	33UF		50V	C580	ECEA1EGE101	E	100UF		25V
C463	ECEA1HGE330	E	33UF		50V	C581	ECQE2224KF	P	0.22UF	K	200V
C464	ECEA1CGE330	E	33UF		16V	C582	ECUX1H103KBG	C	0.01UF	K	50V
C465	ECUX1H222KBN	C	2200PF	K	50V	C583	ECUX1C105ZFW	C	1.0UF	Z	16V
C466	ECEA1CGE330	E	33UF		16V	C584	ECUX1C105ZFW	C	1.0UF	Z	16V
C467	ECA1VEN330	E	33UF		35V	C599	ECEA1HGN100	E	10UF		50V
C468	ECEA1CGE100	E	10UF		16V	C601	ECEA2AGE220	E	22UF		100V
C469	ECEA1CGE470	E	47UF		16V	C603	ECEA2CGE220	E	22UF		160V
C470	ECUX1H103KBG	C	0.01UF	K	50V	C604	ECEA1HGE010	E	1UF		50V
C471	ECUX1H103KBG	C	0.01UF	K	50V	C605	ECEA2EGE3R3	E	3.3UF		250V
C476	ECUX1H103KBG	C	0.01UF	K	50V	C606	ECEA2GGE4R7	E	4.7UF		400V
C479	ECEA1AGE101	E	100UF		10V	C609	ECEA2CGE2R2	E	2.2UF		160V
C480	ECEA1CGE471	E	470UF		16V	C610	ECEA2GGE4R7	E	4.7UF		400V
C482	ECEA1VGE4R7	E	4.7UF		35V	C634	ECUX1H272KBN	C	2700PF	K	50V
C483	ECQV1H124JM	P	0.12UF	J	50V	C635	ECUX1H103KBG	C	0.01UF	K	50V
C484	ECHU1H473JB9	P	0.047UF	J	50V	C638	ECUX1H103KBG	C	0.01UF	K	50V
C485	ECEA1HGE222	E	2200UF		50V	C660	ECEA1VGE470	E	47UF		35V
C488	ECQV1J183JM	P	0.018UF	J	63V	C661	ECQB1H562JF	P	5600PF	J	50V
C490	ECA1EXS330	E	33UF		25V	C662	ECUX1H104ZFX	C	0.1UF	Z	50V
C491	ECEA1VGE222	E	2200UF		35V	C663	ECUX1H104ZFX	C	0.1UF	Z	50V
C492	ECA1HFQ101	E	100UF		50V	C664	ECUX1H102JCX	C	1000PF	J	50V
C497	ECEA1VGE101	E	100UF		35V	C665	ECUX1H121JCG	C	120PF	J	50V
C498	ECEA1VGE101	E	100UF		35V	C666	ECUX1H102JCX	C	1000PF	J	50V
C501	ECUX1H470JCG	C	47PF	J	50V	C667	ECUX1H221JCG	C	220PF	J	50V
C502	ECUX1H103KBG	C	0.01UF	K	50V	C668	ECUX1H123KBX	C	0.012UF	K	50V
C504	ECUX1H103KBG	C	0.01UF	K	50V	C672	ECA1VXS4R7	E	4.7UF		35V
C506	ECUX1H103KBG	C	0.01UF	K	50V	C674	ECEA1VGE470	E	47UF		35V
C507	ECEA1HGN4R7	E	4.7UF		50V	C679	ECA1JFQ120	E	12UF		63V
C509	ECUX1H681JCX	C	680PF	J	50V	C681	ECQE2335KF	P	3.3UF	K	200V
C510	ECYX1H122JCX	C	1200PF	J	50V	C685	ECKD3A221KBP	C	220PF	K	1KV
C511	ECEA1HGE4R7	E	4.7UF		50V	C686	ECKD3A221KBP	C	220PF	K	1KV
C512	ECUX1H271KBN	C	270PF	K	50V	C690	ECWH12H222HS	PP	2200PF	H	1.2KV
C514	ECUX1H103KBG	C	0.01UF	K	50V	C691	ECKD3D391JBP	C	390PF	J	2KV
C515	ECHU1H122GB5	P	1200PF	G	50V	C693	TACD1H471KBT	C	470PF	K	50V
C516	ECUX1H151JCG	C	150PF	J	50V	C694	ECUX1H682KBG	C	6800PF	K	50V
C517	ECEA1HGE2R2	E	2.2UF		50V	C695	ECKD2H221KB5	C	220PF	K	500V
C518	ECEA1HGE2R2	E	2.2UF		50V	C696	ECQB1H102JF	P	1000PF	J	50V
C519	ECUX1H561JCX	C	560PF	J	50V	C697	ECEA1HGE470	E	47UF		50V
C520	ECEA1CGE102	E	1000UF		16V	C698	ECEA1HGE4R7	E	4.7UF		50V
C521	ECEA0JGE471	E	470UF		6.3V	C709	ECEA1HGN100	E	10UF		50V
C522	ECUX1H103KBG	C	0.01UF	K	50V	C712	ECUX1H103KBG	C	0.01UF	K	50V
C523	ECUX1H103KBG	C	0.01UF	K	50V	C715	ECEA2CGE4R7	E	4.7UF		160V
C526	ECEA1HGE3R3	E	3.3UF		50V	C718	ECUX1H103KBG	C	0.01UF	K	50V

	Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
	C719	ECQE2103KF	P	0.01UF	K	200V	C886	ECEA1HGE470	E	47UF		50V
	C720	ECQE2103KF	P	0.01UF	K	200V	C887	ECA1VXS4R7	E	4.7UF		35V
	C752	ECUX1H103KBG	C	0.01UF	K	50V	C888	ECEA2AGE100	E	10UF		100V
	C754	ECEA0JGE471	E	470UF		6.3V	C889	ECA2DGE680Y	E	68UF		200V
	C755	ECEA1CGE100	E	10UF		16V	C891	ECQE4103KF	P	0.01UF	K	400V
	C770	ECEA1HGE330	E	33UF		50V	C892	ECKD3D151JBP	C	150PF	J	2KV
	C772	ECUX1C105ZFW	C	1.0UF	Z	16V	C893	ECUX1H104ZFX	C	0.1UF	Z	50V
	C773	ECEA1HGN4R7	E	4.7UF		50V	C895	ECEA1HGE010	E	1UF		50V
	C774	ECA1HXSR47	E	0.47UF		50V	C896	ECUX1H103KBG	C	0.01UF	K	50V
	C775	ECUX1H103KBG	C	0.01UF	K	50V	C901	ECUX1H220JCN	C	22PF	J	50V
	C776	ECEA1CGE101	E	100UF		16V	C902	ECEA1AGE101	E	100UF		10V
	C777	ECEA1VGE470	E	47UF		35V	C903	ECUX1H103KBG	C	0.01UF	K	50V
	C799	ECEA1CGN470	E	47UF		16V	C904	ECUX1H103KBG	C	0.01UF	K	50V
⚠	C801	ECQU2A105MVZ	PP	1.0UF	M	250V	C905	ECUX1H103KBG	C	0.01UF	K	50V
⚠	C802	ECKDRS222ME	C	2200PF	M		C906	ECUX1H103KBG	C	0.01UF	K	50V
⚠	C803	ECKDRS222ME	C	2200PF	M		C907	ECUX1H221KBN	C	220PF	K	50V
⚠	C805	ECQU2A105MVZ	PP	1.0UF	M	250V	C908	ECUX1H150JCN	C	15PF	J	50V
	C814	ECWF4105JZ	PP	1.0UF	J	400V	C909	ECUX1H150JCN	C	15PF	J	50V
	C815	ECQE4104JF	P	0.1UF	J	400V	C910	ECUX1H221KBN	C	220PF	K	50V
	C819	ECKD3A101KBP	C	100PF	K	1KV	C911	ECUX1H221KBN	C	220PF	K	50V
	C820	ECUX1H223KBX	C	0.022UF	K	50V	C912	ECUX1H333KBX	C	0.033UF	K	50V
	C821	ECQE6473KF	P	0.047UF	K	600V	C1002	ECEA1CGE470	E	47UF		16V
	C822	ECUX1H222KBN	C	2200PF	K	50V	C1003	ECUX1H103KBG	C	0.01UF	K	50V
	C823	ECEA1HGE4R7	E	4.7UF		50V	C1004	ECUX1H103KBG	C	0.01UF	K	50V
	C824	ECEA1HGE100	E	10UF		50V	C1005	ECQV1H105JM	P	1.0UF	J	50V
	C825	ECEA1HGE3R3	E	3.3UF		50V	C1006	ECUX1H750JCG	C	75PF	J	50V
	C827	ECUX1H681KBN	C	680PF	K	50V	C1008	ECEA2DGE100	E	10UF		200V
	C828	ECEA1HGE470	E	47UF		50V	C1009	ECUX1H103KBG	C	0.01UF	K	50V
	C829	ECEA1VGE221	E	220UF		35V	C1010	ECKD2H102KB5	C	1000PF	K	500V
⚠	C831	ECKDRS472ME	C	4700PF	M		C1013	ECUX1H390JCG	C	39PF	J	50V
⚠	C832	ECKDRS472ME	C	4700PF	M		C1014	ECQV1474JZ	P	0.47UF	J	100V
	C839	ECEA0JGE102	E	1000UF		6.3V	C1015	TACCG681P200	C	680PF		200V
	C840	ECEA1HGE4R7	E	4.7UF		50V	C1030	ECUX1H220JCN	C	22PF	J	50V
	C841	ECUX1C105ZFW	C	1.0UF	Z	16V	C1040	ECUX1C105ZFW	C	1.0UF	Z	16V
	C842	ECKD3D151JBP	C	150PF	J	2KV	C1050	ECUX1H050CCN	C	5PF	C	50V
	C843	ECEA1CGE470	E	47UF		16V	C1051	ECUX1H102KBN	C	1000PF	K	50V
	C844	ECA2CGE221W	E	220UF		160V	C1052	ECEA0JKG221Q	E	220UF		6.3V
	C853	ECQE1224KF	P	0.22UF	K	100V	C1059	ECEA1CKG470	E	47UF		16V
	C861	ECOS2DB102CB	E	1000UF		200V	C1060	ECUX1H050CCN	C	5PF	C	50V
	C862	ECOS2CA331AB	E	330UF		160V	C1061	ECUX1H102KBN	C	1000PF	K	50V
	C863	ECEA1HGE222	E	2200UF		50V	C1062	ECEA0JKG221Q	E	220UF		6.3V
	C864	ECOS1EA562AB	E	5600UF		25V	C1068	ECUX1H102KBN	C	1000PF	K	50V
	C865	ECA1CFQ222L	E	2200UF		16V	C1075	ECEA2CGE010	E	1UF		160V
	C866	ECA1CXL101	E	100UF		16V	C1077	ECQE2104JF	P	0.1UF	J	200V
	C867	ECA1EFQ102	E	1000UF		25V	C1085	ECUX1H103KBG	C	0.01UF	K	50V
	C868	ECKD2H222KB5	C	2200PF	K	500V	C1102	ECEA1CGE470	E	47UF		16V
	C870	ECA1HFQ101	E	100UF		50V	C1103	ECUX1H103KBG	C	0.01UF	K	50V
	C871	ECEA1HGE221	E	220UF		50V	C1104	ECUX1H103KBG	C	0.01UF	K	50V
	C872	ECEA1AGE102	E	1000UF		10V	C1105	ECQV1H105JM	P	1.0UF	J	50V
	C873	ECUX1H104ZFX	C	0.1UF	Z	50V	C1106	ECUX1H910JC	C	91PF	J	50V
	C874	ECUX1H104ZFX	C	0.1UF	Z	50V	C1108	ECEA2DGE100	E	10UF		200V
	C875	ECA1CXLV331	E	330UF		16V	C1109	ECUX1H103KBG	C	0.01UF	K	50V
	C876	ECEA1HGE221	E	220UF		50V	C1110	ECKD2H102KB5	C	1000PF	K	500V
	C877	ECUX1H104ZFX	C	0.1UF	Z	50V	C1113	ECUX1H390JCG	C	39PF	J	50V
	C878	ECEA2DGE470	E	47UF		200V	C1114	ECQV1474JZ	P	0.47UF	J	100V
	C879	ECEA1AGE102	E	1000UF		10V	C1115	TACCG681P200	C	680PF		200V
	C880	ECUX1H121JCG	C	120PF	J	50V	C1130	ECUX1H220JCN	C	22PF	J	50V
	C881	ECUX1H102JCX	C	1000PF	J	50V	C1140	ECUX1C105ZFW	C	1.0UF	Z	16V
	C882	ECUX1H221JCG	C	220PF	J	50V	C1150	ECUX1H050CCN	C	5PF	C	50V
	C883	ECEA1EGE470	E	47UF		25V	C1151	ECUX1H102KBN	C	1000PF	K	50V
	C884	ECUX1H222KBN	C	2200PF	K	50V	C1152	ECEA0JKG221Q	E	220UF		6.3V
	C885	ECKD2H272KB5	C	2700PF	K	500V	C1159	ECEA1CKG470	E	47UF		16V

Ref.No.	Part No.	Description			Ref.No.	Part No.	Description		
C1160	ECUX1H050CCN	C 5PF	C	50V	C1383	TACCJ103P200	C 0.01UF		200V
C1161	ECUX1H102KBN	C 1000PF	K	50V	C1385	ECUX1H103KBG	C 0.01UF	K	50V
C1162	ECEA0JKG221Q	E 220UF		6.3V	C1386	TCUX2H101JCM	C 100PF	J	500V
C1168	ECUX1H102KBN	C 1000PF	K	50V	C1391	ECUX1H103KBG	C 0.01UF	K	50V
C1175	ECEA2CGE010	E 1UF		160V	C1395	ECKD2H332KB5	C 3300PF	K	500V
C1177	ECQE2104JF	P 0.1UF	J	200V	C1398	ECEA1HKG010	E 1UF		50V
C1185	ECUX1H103KBG	C 0.01UF	K	50V	C1399	ECEA1HKG010	E 1UF		50V
C1202	ECEA1CGE470	E 47UF		16V	C1410	ECUX1C105ZFW	C 1.0UF	Z	16V
C1203	ECUX1H103KBG	C 0.01UF	K	50V					
C1204	ECUX1H103KBG	C 0.01UF	K	50V		RESISTORS			
C1205	ECQV1H105JM	P 1.0UF	J	50V	J052	ERDS2TC0	C 0 OHM		1/4W
C1206	ECUX1H820JCG	C 82PF	J	50V	J053	ERDS2TC0	C 0 OHM		1/4W
C1209	ECUX1H103KBG	C 0.01UF	K	50V	J054	ERDS2TC0	C 0 OHM		1/4W
C1210	ECKD2H102KB5	C 1000PF	K	500V	J055	ERDS2TC0	C 0 OHM		1/4W
C1213	ECUX1H390JCG	C 39PF	J	50V	J101	ERDS2TC0	C 0 OHM		1/4W
C1214	ECQV1474JZ	P 0.47UF	J	100V	J112	ERDS2TC0	C 0 OHM		1/4W
C1215	TACCG681P200	C 680PF		200V	J114	ERDS2TC0	C 0 OHM		1/4W
C1230	ECUX1H220JCN	C 22PF	J	50V	J119	ERDS2TC0	C 0 OHM		1/4W
C1240	ECUX1C105ZFW	C 1.0UF	Z	16V	J120	ERDS2TC0	C 0 OHM		1/4W
C1250	ECUX1H050CCN	C 5PF	C	50V	J121	ERDS2TC0	C 0 OHM		1/4W
C1251	ECUX1H102KBN	C 1000PF	K	50V	J122	ERDS2TC0	C 0 OHM		1/4W
C1252	ECEA0JKG221Q	E 220UF		6.3V	J123	ERDS2TC0	C 0 OHM		1/4W
C1259	ECEA1CKG470	E 47UF		16V	J130	ERDS2TC0	C 0 OHM		1/4W
C1260	ECUX1H050CCN	C 5PF	C	50V	J131	ERDS2TC0	C 0 OHM		1/4W
C1261	ECUX1H102KBN	C 1000PF	K	50V	J132	ERDS2TC0	C 0 OHM		1/4W
C1262	ECEA0JKG221Q	E 220UF		6.3V	J133	ERDS2TC0	C 0 OHM		1/4W
C1268	ECUX1H102KBN	C 1000PF	K	50V	J134	ERDS2TC0	C 0 OHM		1/4W
C1275	ECEA2CGE010	E 1UF		160V	J135	ERDS2TC0	C 0 OHM		1/4W
C1277	ECQE2104JF	P 0.1UF	J	200V	J136	ERDS2TC0	C 0 OHM		1/4W
C1285	ECUX1H103KBG	C 0.01UF	K	50V	J138	ERDS2TC0	C 0 OHM		1/4W
C1301	ECEA1HGE100	E 10UF		50V	J147	ERDS2TC0	C 0 OHM		1/4W
C1302	ECUX1H103KBG	C 0.01UF	K	50V	J149	ERDS2TC0	C 0 OHM		1/4W
C1303	ECEA1CGE101	E 100UF		16V	J153	ERDS2TC0	C 0 OHM		1/4W
C1304	ECEA1CGE102	E 1000UF		16V	J200	ERJ8GCY0R00	M 0 OHM		1/8W
C1305	ECQV1H474JM	P 0.47UF	J	50V	J201	ERD25TC0	C 0 OHM		1/4W
C1306	ECUX1C105ZFW	C 1.0UF	Z	16V	J201	ERJ8GCY0R00	M 0 OHM		1/8W
C1307	ECUX1H100DCN	C 10PF	D	50V	J202	ERD25TC0	C 0 OHM		1/4W
C1308	ECUX1H103KBG	C 0.01UF	K	50V	J202	ERJ8GCY0R00	M 0 OHM		1/8W
C1309	ECUX1H102KBN	C 1000PF	K	50V	J203	ERD25TC0	C 0 OHM		1/4W
C1310	ECEA2CGE470	E 47UF		160V	J203	ERJ8GCY0R00	M 0 OHM		1/8W
C1311	ECUX1H103KBG	C 0.01UF	K	50V	J204	ERD25TC0	C 0 OHM		1/4W
C1312	ECUX1C105ZFW	C 1.0UF	Z	16V	J204	ERJ8GCY0R00	M 0 OHM		1/8W
C1314	ECEA1CGE470	E 47UF		16V	J205	ERD25TC0	C 0 OHM		1/4W
C1315	ECUX1H103KBG	C 0.01UF	K	50V	J205	ERJ8GCY0R00	M 0 OHM		1/8W
C1316	ECUX1H103KBG	C 0.01UF	K	50V	J206	ERD25TC0	C 0 OHM		1/4W
C1318	ECUX1H103KBG	C 0.01UF	K	50V	J206	ERJ8GCY0R00	M 0 OHM		1/8W
C1319	ECEA1HGE100	E 10UF		50V	J207	ERJ8GCY0R00	M 0 OHM		1/8W
C1320	ECUX1H220JCN	C 22PF	J	50V	J208	ERJ8GCY0R00	M 0 OHM		1/8W
C1321	ECUX1H220JCN	C 22PF	J	50V	J209	ERJ8GCY0R00	M 0 OHM		1/8W
C1322	ECUX1H220JCN	C 22PF	J	50V	J210	ERD25TC0	C 0 OHM		1/4W
C1323	ECEA1AGE101	E 100UF		10V	J210	ERJ8GCY0R00	M 0 OHM		1/8W
C1324	ECUX1H220JCN	C 22PF	J	50V	J211	ERJ8GCY0R00	M 0 OHM		1/8W
C1325	ECEA1CGE101	E 100UF		16V	J212	ERD25TC0	C 0 OHM		1/4W
C1326	ECUX1H223KBX	C 0.022UF	K	50V	J212	ERJ8GCY0R00	M 0 OHM		1/8W
C1328	ECUX1H101JCG	C 100PF	J	50V	J213	ERJ8GCY0R00	M 0 OHM		1/8W
C1336	ECUX1H060DCN	C 6PF	D	50V	J214	ERJ8GCY0R00	M 0 OHM		1/8W
C1338	ECUX1H101JCG	C 100PF	J	50V	J215	ERJ8GCY0R00	M 0 OHM		1/8W
C1350	ECUX1H102KBN	C 1000PF	K	50V	J216	ERD25TC0	C 0 OHM		1/4W
C1351	ECUX1H102KBN	C 1000PF	K	50V	J216	ERJ8GCY0R00	M 0 OHM		1/8W
C1352	TACCG102P200	C 1000PF		200V	J217	ERD25TC0	C 0 OHM		1/4W
C1381	ECUX1H103KBG	C 0.01UF	K	50V	J217	ERJ8GCY0R00	M 0 OHM		1/8W
C1382	ECEA2DGE100	E 10UF		200V	J218	ERJ8GCY0R00	M 0 OHM		1/8W

Ref.No.	Part No.	Description			Ref.No.	Part No.	Description		
J219	ERD25TCO	C	0 OHM	1/4W	J401	ERJ8GCY0R00	M	0 OHM	1/8W
J219	ERJ8GCY0R00	M	0 OHM	1/8W	J402	ERJ8GCY0R00	M	0 OHM	1/8W
J220	ERJ8GCY0R00	M	0 OHM	1/8W	J403	ERJ8GCY0R00	M	0 OHM	1/8W
J221	ERD25TCO	C	0 OHM	1/4W	J404	ERJ8GCY0R00	M	0 OHM	1/8W
J221	ERJ8GCY0R00	M	0 OHM	1/8W	J405	ERJ8GCY0R00	M	0 OHM	1/8W
J222	ERD25TCO	C	0 OHM	1/4W	J406	ERJ8GCY0R00	M	0 OHM	1/8W
J222	ERJ8GCY0R00	M	0 OHM	1/8W	J407	ERJ8GCY0R00	M	0 OHM	1/8W
J223	ERD25TCO	C	0 OHM	1/4W	J408	ERJ8GCY0R00	M	0 OHM	1/8W
J223	ERJ8GCY0R00	M	0 OHM	1/8W	J409	ERJ8GCY0R00	M	0 OHM	1/8W
J224	ERJ8GCY0R00	M	0 OHM	1/8W	J410	ERJ8GCY0R00	M	0 OHM	1/8W
J225	ERD25TCO	C	0 OHM	1/4W	J411	ERJ8GCY0R00	M	0 OHM	1/8W
J225	ERJ8GCY0R00	M	0 OHM	1/8W	J412	ERJ8GCY0R00	M	0 OHM	1/8W
J226	ERJ8GCY0R00	M	0 OHM	1/8W	J413	ERJ8GCY0R00	M	0 OHM	1/8W
J229	ERD25TCO	C	0 OHM	1/4W	J414	ERJ8GCY0R00	M	0 OHM	1/8W
J230	ERD25TCO	C	0 OHM	1/4W	J415	ERJ8GCY0R00	M	0 OHM	1/8W
J231	ERD25TCO	C	0 OHM	1/4W	J417	ERJ8GCY0R00	M	0 OHM	1/8W
J232	ERD25TCO	C	0 OHM	1/4W	J418	ERJ8GCY0R00	M	0 OHM	1/8W
J233	ERD25TCO	C	0 OHM	1/4W	J419	ERJ8GCY0R00	M	0 OHM	1/8W
J234	ERD25TCO	C	0 OHM	1/4W	J420	ERJ8GCY0R00	M	0 OHM	1/8W
J235	ERD25TCO	C	0 OHM	1/4W	J421	ERJ8GCY0R00	M	0 OHM	1/8W
J236	ERD25TCO	C	0 OHM	1/4W	J422	ERJ8GCY0R00	M	0 OHM	1/8W
J237	ERD25TCO	C	0 OHM	1/4W	J423	ERJ8GCY0R00	M	0 OHM	1/8W
J238	ERD25TCO	C	0 OHM	1/4W	J424	ERJ8GCY0R00	M	0 OHM	1/8W
J239	ERD25TCO	C	0 OHM	1/4W	J425	ERJ8GCY0R00	M	0 OHM	1/8W
J240	ERD25TCO	C	0 OHM	1/4W	J426	ERJ6GEY0R00	M	0 OHM	1/10W
J241	ERD25TCO	C	0 OHM	1/4W	J427	ERJ8GCY0R00	M	0 OHM	1/8W
J242	ERD25TCO	C	0 OHM	1/4W	J428	ERJ8GCY0R00	M	0 OHM	1/8W
J243	ERD25TCO	C	0 OHM	1/4W	J429	ERJ8GCY0R00	M	0 OHM	1/8W
J244	ERD25TCO	C	0 OHM	1/4W	J430	ERJ8GCY0R00	M	0 OHM	1/8W
J246	ERD25TCO	C	0 OHM	1/4W	J431	ERJ8GCY0R00	M	0 OHM	1/8W
J247	ERD25TCO	C	0 OHM	1/4W	J432	ERJ8GCY0R00	M	0 OHM	1/8W
J248	ERD25TCO	C	0 OHM	1/4W	J433	ERJ8GCY0R00	M	0 OHM	1/8W
J250	ERD25TCO	C	0 OHM	1/4W	J434	ERJ8GCY0R00	M	0 OHM	1/8W
J250	ERJ6GEY0R00	M	0 OHM	1/10W	J435	ERJ8GCY0R00	M	0 OHM	1/8W
J251	ERD25TCO	C	0 OHM	1/4W	J436	ERJ8GCY0R00	M	0 OHM	1/8W
J251	ERJ6GEY0R00	M	0 OHM	1/10W	J437	ERJ8GCY0R00	M	0 OHM	1/8W
J252	ERD25TCO	C	0 OHM	1/4W	J438	ERJ8GCY0R00	M	0 OHM	1/8W
J252	ERJ6GEY0R00	M	0 OHM	1/10W	J439	ERJ8GCY0R00	M	0 OHM	1/8W
J253	ERJ6GEY0R00	M	0 OHM	1/10W	J440	ERJ8GCY0R00	M	0 OHM	1/8W
J255	ERD25TCO	C	0 OHM	1/4W	J441	ERJ8GCY0R00	M	0 OHM	1/8W
J258	ERD25TCO	C	0 OHM	1/4W	J442	ERJ8GCY0R00	M	0 OHM	1/8W
J260	ERD25TCO	C	0 OHM	1/4W	J443	ERJ8GCY0R00	M	0 OHM	1/8W
J261	ERD25TCO	C	0 OHM	1/4W	J444	ERJ8GCY0R00	M	0 OHM	1/8W
J264	ERD25TCO	C	0 OHM	1/4W	J445	ERJ8GCY0R00	M	0 OHM	1/8W
J265	ERD25TCO	C	0 OHM	1/4W	J446	ERJ8GCY0R00	M	0 OHM	1/8W
J268	ERD25TCO	C	0 OHM	1/4W	J447	ERJ8GCY0R00	M	0 OHM	1/8W
J271	ERD25TCO	C	0 OHM	1/4W	J448	ERJ8GCY0R00	M	0 OHM	1/8W
J272	ERD25TCO	C	0 OHM	1/4W	J449	ERJ8GCY0R00	M	0 OHM	1/8W
J273	ERD25TCO	C	0 OHM	1/4W	J450	ERJ8GCY0R00	M	0 OHM	1/8W
J274	ERD25TCO	C	0 OHM	1/4W	J451	ERJ6GEY0R00	M	0 OHM	1/10W
J276	ERD25TCO	C	0 OHM	1/4W	J452	ERJ6GEY0R00	M	0 OHM	1/10W
J280	ERD25TCO	C	0 OHM	1/4W	J454	ERJ6GEY0R00	M	0 OHM	1/10W
J301	ERD25TCO	C	0 OHM	1/4W	J455	ERJ6GEY0R00	M	0 OHM	1/10W
J302	ERD25TCO	C	0 OHM	1/4W	J456	ERJ6GEY0R00	M	0 OHM	1/10W
J303	ERD25TCO	C	0 OHM	1/4W	J460	ERJ6GEY0R00	M	0 OHM	1/10W
J304	ERD25TCO	C	0 OHM	1/4W	J461	ERJ6GEY0R00	M	0 OHM	1/10W
J307	ERD25TCO	C	0 OHM	1/4W	J462	ERJ6GEY0R00	M	0 OHM	1/10W
J311	ERD25TCO	C	0 OHM	1/4W	J463	ERJ6GEY0R00	M	0 OHM	1/10W
J313	ERD25TCO	C	0 OHM	1/4W	J465	ERJ6GEY0R00	M	0 OHM	1/10W
J318	ERD25TCO	C	0 OHM	1/4W	J466	ERJ6GEY0R00	M	0 OHM	1/10W
J322	ERD25TCO	C	0 OHM	1/4W	J467	ERJ6GEY0R00	M	0 OHM	1/10W
J326	ERD25TCO	C	0 OHM	1/4W	J469	ERJ6GEY0R00	M	0 OHM	1/10W

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
J470	ERJ6GEY0R00	M	0	OHM	1/10W	R208	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
J471	ERJ6GEY0R00	M	0	OHM	1/10W	R212	ERJ6GEYJ182	M	1.8K	OHM	J 1/10W
J472	ERJ6GEY0R00	M	0	OHM	1/10W	R214	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
J473	ERJ6GEY0R00	M	0	OHM	1/10W	R215	ERJ6GEYJ102	M	1K	OHM	J 1/10W
J474	ERJ6GEY0R00	M	0	OHM	1/10W	R217	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
J475	ERJ6GEY0R00	M	0	OHM	1/10W	R218	ERJ6GEYJ562	M	5.6K	OHM	J 1/10W
J476	ERJ6GEY0R00	M	0	OHM	1/10W	R219	ERJ12YJ391	M	390	OHM	J 1/2W
J478	ERJ6GEY0R00	M	0	OHM	1/10W	R220	ERDS1FJ331	C	330	OHM	J 1/2W
J479	ERJ6GEY0R00	M	0	OHM	1/10W	R221	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
J480	ERJ6GEY0R00	M	0	OHM	1/10W	R223	ERJ6GEYJ102	M	1K	OHM	J 1/10W
J481	ERJ6GEY0R00	M	0	OHM	1/10W	R224	ERJ6ENF2702	M	27K	OHM	F 1/10W
J482	ERJ6GEY0R00	M	0	OHM	1/10W	R225	ERJ6ENF2433	M	243K	OHM	F 1/10W
J483	ERJ6GEY0R00	M	0	OHM	1/10W	R239	ERJ6GEYJ101	M	100	OHM	J 1/10W
J485	ERJ6GEY0R00	M	0	OHM	1/10W	R241	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
J486	ERJ6GEY0R00	M	0	OHM	1/10W	R242	ERJ6GEYJ103	M	10K	OHM	J 1/10W
J487	ERJ6GEY0R00	M	0	OHM	1/10W	R244	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
J488	ERJ6GEY0R00	M	0	OHM	1/10W	R245	ERJ6GEYJ101	M	100	OHM	J 1/10W
J489	ERJ6GEY0R00	M	0	OHM	1/10W	R247	ERJ6GEYJ101	M	100	OHM	J 1/10W
J490	ERJ6GEY0R00	M	0	OHM	1/10W	R248	ERJ6GEYJ101	M	100	OHM	J 1/10W
J491	ERJ6GEY0R00	M	0	OHM	1/10W	R249	ERJ6GEYJ101	M	100	OHM	J 1/10W
J492	ERJ6GEY0R00	M	0	OHM	1/10W	R250	ERJ6GEYJ392	M	3.9K	OHM	J 1/10W
J493	ERJ6GEY0R00	M	0	OHM	1/10W	R251	ERJ6GEYJ562	M	5.6K	OHM	J 1/10W
J495	ERJ6GEY0R00	M	0	OHM	1/10W	R252	ERJ6GEYJ104	M	100K	OHM	J 1/10W
J501	ERJ8GCY0R00	M	0	OHM	1/8W	R253	ERJ6GEYJ104	M	100K	OHM	J 1/10W
J502	ERJ8GCY0R00	M	0	OHM	1/8W	R260	ERDS2TJ471	C	470	OHM	J 1/4W
J504	ERJ8GCY0R00	M	0	OHM	1/8W	R261	ERDS2TJ471	C	470	OHM	J 1/4W
J505	ERJ8GCY0R00	M	0	OHM	1/8W	R262	ERJ6GEYJ103	M	10K	OHM	J 1/10W
J506	ERJ8GCY0R00	M	0	OHM	1/8W	R263	ERJ6GEYJ103	M	10K	OHM	J 1/10W
J508	ERJ8GCY0R00	M	0	OHM	1/8W	R264	ERJ6GEYJ101	M	100	OHM	J 1/10W
J509	ERJ8GCY0R00	M	0	OHM	1/8W	R265	ERJ6GEYJ101	M	100	OHM	J 1/10W
J510	ERJ8GCY0R00	M	0	OHM	1/8W	R266	ERDS2TJ471	C	470	OHM	J 1/4W
J511	ERJ8GCY0R00	M	0	OHM	1/8W	R267	ERDS2TJ471	C	470	OHM	J 1/4W
J512	ERJ8GCY0R00	M	0	OHM	1/8W	R268	ERJ6GEYJ103	M	10K	OHM	J 1/10W
J513	ERJ8GCY0R00	M	0	OHM	1/8W	R269	ERJ6GEYJ103	M	10K	OHM	J 1/10W
J518	ERJ8GCY0R00	M	0	OHM	1/8W	R270	ERJ6GEYJ101	M	100	OHM	J 1/10W
J522	ERJ8GCY0R00	M	0	OHM	1/8W	R271	ERJ6GEYJ101	M	100	OHM	J 1/10W
J524	ERJ8GCY0R00	M	0	OHM	1/8W	R279	ERJ8GCYJ184	M	180K	OHM	J 1/8W
J525	ERJ8GCY0R00	M	0	OHM	1/8W	R280	ERJ12YJ184	M	180K	OHM	J 1/2W
J526	ERJ8GCY0R00	M	0	OHM	1/8W	R281	ERJ12YJ184	M	180K	OHM	J 1/2W
J527	ERJ8GCY0R00	M	0	OHM	1/8W	R282	ERJ12YJ184	M	180K	OHM	J 1/2W
J870	ERJ8GCY0R00	M	0	OHM	1/8W	R283	ERJ12YJ184	M	180K	OHM	J 1/2W
J901	ERDS2TC0	C	0	OHM	1/4W	R285	ERDS1FJ394	C	390K	OHM	J 1/2W
J902	ERDS2TC0	C	0	OHM	1/4W	R286	ERJ6ENF1822	M	18.2K	OHM	F 1/10W
J1301	ERD25TC0	C	0	OHM	1/4W	R287	ERJ6GEYJ474	M	470K	OHM	J 1/10W
J1302	ERD25TC0	C	0	OHM	1/4W	R288	ERC12GJ565	S	5.6M	OHM	J 1/2W
J1303	ERDS2TC0	C	0	OHM	1/4W	R289	ERC12GJ565	S	5.6M	OHM	J 1/2W
J1304	ERDS2TC0	C	0	OHM	1/4W	R290	ERJ6ENF8062	M	80.6K	OHM	F 1/10W
R101	ERJ6ENF6042	M	60.4K	OHM	F 1/10W	R291	ERJ6ENF6981	M	6.98K	OHM	F 1/10W
R102	ERJ6ENF6982	M	69.8K	OHM	F 1/10W	R292	ERJ6ENF5902	M	59K	OHM	F 1/10W
R103	ERJ6ENF3742	M	37.4K	OHM	F 1/10W	R293	ERJ6ENF1132	M	11.3K	OHM	F 1/10W
R105	ERJ6GEYJ102	M	1K	OHM	J 1/10W	R294	ERC12GJ565	S	5.6M	OHM	J 1/2W
R106	ERJ6GEYJ681	M	680	OHM	J 1/10W	R295	ERDS1FJ103	C	10K	OHM	J 1/2W
R108	ERJ6ENF1741	M	1.74K	OHM	F 1/10W	R299	ERJ6GEYJ152	M	1.5K	OHM	J 1/10W
R109	ERJ6ENF3321	M	3.32K	OHM	F 1/10W	R301	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
R111	ERJ6GEYJ272	M	2.7K	OHM	J 1/10W	R302	ERJ6GEYJ152	M	1.5K	OHM	J 1/10W
R113	ERJ6GEYJ272	M	2.7K	OHM	J 1/10W	R303	ERDS1FJ104	C	100K	OHM	J 1/2W
R114	ERDS2TJ2R7	C	2.7	OHM	J 1/4W	R304	ERDS1FJ273	C	27K	OHM	J 1/2W
R203	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R305	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R204	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R306	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R205	ERJ6GEYK106	M	10M	OHM	K 1/10W	R307	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
R206	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R308	ERJ6GEYJ474	M	470K	OHM	J 1/10W
R207	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R311	ERJ6ENF5621	M	5.62K	OHM	F 1/10W

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
R312	ERJ6ENF5621	M	5.62K	OHM	F	1/10W	R388	ERJ6ENF5362	M	53.6K	OHM	F	1/10W
R314	EROS2CKF2211	M	2.21K	OHM	F	1/4W	R389	ERJ6ENF2322	M	23.2K	OHM	F	1/10W
R315	EROS2CKF1502	M	15K	OHM	F	1/4W	R390	ERJ6GEYJ123	M	12K	OHM	J	1/10W
R316	ERG1SJ104	M	100K	OHM	J	1W	R391	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R317	ERG1SJ104	M	100K	OHM	J	1W	R400	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W
R318	ERDS2TJ434	C	430K	OHM	J	1/4W	R401	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W
R318A	ERDS2TJ434	C	430K	OHM	J	1/4W	R402	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R319	ERJ6GEYJ821	M	820	OHM	J	1/10W	R403	ERJ6ENF3013	M	301K	OHM	F	1/10W
R321	ERDS1FJ103	C	10K	OHM	J	1/2W	R420	ERJ6ENF8661	M	8.66K	OHM	F	1/10W
R322	ERDS2TJ102	C	1K	OHM	J	1/4W	R421	ERJ6ENF5110	M	511	OHM	F	1/10W
R323	ERQ14AJ101	F	100	OHM	J	1/4W	R440	ERJ6GEYJ333	M	33K	OHM	J	1/10W
R324	ERQ14AJ181	F	180	OHM	J	1/4W	R441	ERJ6GEYJ182	M	1.8K	OHM	J	1/10W
R325	ERDS2TJ222	C	2.2K	OHM	J	1/4W	R442	ERJ6GEY0R00	M	0	OHM		1/10W
R326	ERDS2TJ333	C	33K	OHM	J	1/4W	R444	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R327	ERDS1FJ474	C	470K	OHM	J	1/2W	R445	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R328	ERDS1FJ564	C	560K	OHM	J	1/2W	R446	ERDS1FJ391	C	390	OHM	J	1/2W
R329	ERDS1FJ474	C	470K	OHM	J	1/2W	R447	ERJ6GEYJ153	M	15K	OHM	J	1/10W
R330	ERJ6ENF1003	M	100K	OHM	F	1/10W	R448	ERJ6GEYJ822	M	8.2K	OHM	J	1/10W
R331	ERJ6ENF1871	M	1.87K	OHM	F	1/10W	R451	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R332	ERJ6ENF4022	M	40.2K	OHM	F	1/10W	R456	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R333	ERJ6ENF1373	M	137K	OHM	F	1/10W	R457	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R334	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R458	ERJ6GEYJ822	M	8.2K	OHM	J	1/10W
R335	ERJ6ENF2211	M	2.21K	OHM	F	1/10W	R459	ERJ6ENF1583	M	158K	OHM	F	1/10W
R336	ERDS1FJ125	C	1.2M	OHM	J	1/2W	R460	ERD25FJ101K	C	100	OHM	J	1/4W
R337	ERDS2TJ102	C	1K	OHM	J	1/4W	R461	ERJ6ENF1101	M	1.1K	OHM	F	1/10W
R338	ERJ6ENF7501	M	7.5K	OHM	F	1/10W	R462	ERJ6ENF5621	M	5.62K	OHM	F	1/10W
R339	ERDS2TJ102	C	1K	OHM	J	1/4W	R463	ERJ6ENF3321	M	3.32K	OHM	F	1/10W
R340	ERJ6GEYJ123	M	12K	OHM	J	1/10W	R464	ERJ6ENF2211	M	2.21K	OHM	F	1/10W
R341	ERJ6GEY0R00	M	0	OHM		1/10W	R465	ERD25FJ222K	C	2.2K	OHM	J	1/4W
R342	ERJ6GEYJ681	M	680	OHM	J	1/10W	R466	ERJ6ENF3651	M	3.65K	OHM	F	1/10W
R343	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W	R467	ERJ6ENF2741	M	2.74K	OHM	F	1/10W
R344	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W	R468	ERJ6ENF7872	M	78.7K	OHM	F	1/10W
R345	ERJ6GEYJ104	M	100K	OHM	J	1/10W	R469	ERJ6ENF2102	M	21K	OHM	F	1/10W
R349	ERJ6ENF1002	M	10K	OHM	F	1/10W	R470	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R350	ERJ6ENF1372	M	13.7K	OHM	F	1/10W	R471	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R351	ERDS1FJ104	C	100K	OHM	J	1/2W	R472	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W
R352	ERDS1FJ104	C	100K	OHM	J	1/2W	R473	ERJ6GEYJ122	M	1.2K	OHM	J	1/10W
R353	ERJ6ENF5901	M	5.9K	OHM	F	1/10W	R474	ERJ6GEYJ333	M	33K	OHM	J	1/10W
R354	ERJ6GEYJ123	M	12K	OHM	J	1/10W	R475	ERJ6ENF4021	M	4.02K	OHM	F	1/10W
R356	ERJ6GEYJ563	M	56K	OHM	J	1/10W	R476	ERJ6GEYJ153	M	15K	OHM	J	1/10W
R357	ERDS1FJ104	C	100K	OHM	J	1/2W	R477	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R361	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W	R478	ERJ6ENF2001	M	2K	OHM	F	1/10W
R362	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W	R479	ERJ6ENF1002	M	10K	OHM	F	1/10W
R363	ERDS1FJ151	C	150	OHM	J	1/2W	R480	ERQ14AJ330	F	33	OHM	J	1/4W
R368	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R481	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R369	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R482	ERJ6ENF1002	M	10K	OHM	F	1/10W
R371	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W	R483	ERJ6ENF1202	M	12K	OHM	F	1/10W
R372	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W	R484	ERJ6ENF7502	M	75K	OHM	F	1/10W
R373	ERJ6ENF6811	M	6.81K	OHM	F	1/10W	R485	ERQ1CJP4R7S	F	4.7	OHM	J	1W
R374	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W	R486	ERDS1FJ751	C	750	OHM	J	1/2W
R375	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W	R487	ERDS1FJ751	C	750	OHM	J	1/2W
R376	ERJ6ENF2001	M	2K	OHM	F	1/10W	R488	ERDS1FJ751	C	750	OHM	J	1/2W
R377	ERDS2TJ510	C	51	OHM	J	1/4W	R489	ERJ6ENF1001	M	1K	OHM	F	1/10W
R378	ERJ6ENF1001	M	1K	OHM	F	1/10W	R490	ERJ6ENF3921	M	3.92K	OHM	F	1/10W
R379	ERDS2TJ510	C	51	OHM	J	1/4W	R491	ERJ6ENF2261	M	2.26K	OHM	F	1/10W
R380	ERDS2TJ121	C	120	OHM	J	1/4W	R492	ERJ6GEYJ470	M	47	OHM	J	1/10W
R381	ERJ6ENF8251	M	8.25K	OHM	F	1/10W	R493	ERX2SG1R0	M	1	OHM	G	2W
R382	ERJ6ENF1212	M	12.1K	OHM	F	1/10W	R494	ERD25FJ3R3K	C	3.3	OHM	J	1/4W
R383	ERJ6ENF4021	M	4.02K	OHM	F	1/10W	R495	ERD25FJ3R3K	C	3.3	OHM	J	1/4W
R384	ERJ6ENF1961	M	1.96K	OHM	F	1/10W	R496	ERG3FJ680	M	68	OHM	J	3W
R385	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W	R497	ERDS2TJ332	C	3.3K	OHM	J	1/4W
R386	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W	R498	ERG3FJ470	M	47	OHM	J	3W

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
R499	ERQ14AJ1R0	F	1	OHM	J 1/4W	R607	ERG3FJ822	M	8.2K	OHM	J 3W
R502	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R608	ERG1SJ104	M	100K	OHM	J 1W
R504	ERJ6GEYJ123	M	12K	OHM	J 1/10W	R609	ERG1SJ823	M	82K	OHM	J 1W
R505	ERJ8GCYJ153	M	15K	OHM	J 1/8W	R610	ERJ12YJ104	M	100K	OHM	J 1/2W
R506	ERJ6GEYJ561	M	560	OHM	J 1/10W	R611	ERJ12YJ104	M	100K	OHM	J 1/2W
R507	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W	R620	ERJ6GEYJ104	M	100K	OHM	J 1/10W
R508	ERJ6GEYJ562	M	5.6K	OHM	J 1/10W	R621	ERDS1FJ224	C	220K	OHM	J 1/2W
R509	ERJ6GEYJ223	M	22K	OHM	J 1/10W	R622	ERDS1FJ224	C	220K	OHM	J 1/2W
R510	ERJ6ENF4221	M	4.22K	OHM	F 1/10W	R625	ERJ6GEY0R00	M	0	OHM	1/10W
R511	ERJ6ENF5111	M	5.11K	OHM	F 1/10W	R630	ERJ6GEYJ183	M	18K	OHM	J 1/10W
R512	ERJ6ENF1502	M	15K	OHM	F 1/10W	R631	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
R516	ERJ6ENF1821	M	1.82K	OHM	F 1/10W	R633	ERJ6GEYJ101	M	100	OHM	J 1/10W
R518	ERJ6GEYJ332	M	3.3K	OHM	J 1/10W	R634	ERJ6ENF1002	M	10K	OHM	F 1/10W
R520	ERJ6ENF1051	M	1.05K	OHM	F 1/10W	R636	ERJ6ENF5361	M	5.36K	OHM	F 1/10W
R521	ERJ6GEYJ104	M	100K	OHM	J 1/10W	R637	ERJ6ENF1582	M	15.8K	OHM	F 1/10W
R522	ERJ6ENF9091	M	9.09K	OHM	F 1/10W	R638	ERJ6ENF4641	M	4.64K	OHM	F 1/10W
R523	ERJ6GEYJ333	M	33K	OHM	J 1/10W	R640	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
R524	ERDS1FJ470	C	47	OHM	J 1/2W	R641	ERJ6GEYJ101	M	100	OHM	J 1/10W
R525	ERJ6ENF1001	M	1K	OHM	F 1/10W	R642	ERJ6GEYJ101	M	100	OHM	J 1/10W
R526	ERJ6ENF2553	M	255K	OHM	F 1/10W	R644	ERD25FJ100K	C	10	OHM	J 1/4W
R527	ERJ6GEYJ104	M	100K	OHM	J 1/10W	R645	ERD25FJ100K	C	10	OHM	J 1/4W
R528	ERJ6GEYJ122	M	1.2K	OHM	J 1/10W	R646	ERD25FJ220K	C	22	OHM	J 1/4W
R529	ERJ6GEYJ682	M	6.8K	OHM	J 1/10W	R650	ERJ6ENF3921	M	3.92K	OHM	F 1/10W
R530	ERJ6GEYJ223	M	22K	OHM	J 1/10W	R651	ERJ6ENF3921	M	3.92K	OHM	F 1/10W
R539	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W	R652	ERJ6GEYJ472	M	4.7K	OHM	J 1/10W
R542	ERJ8ENF3241	M	3.24K	OHM	F 1/8W	R653	ERJ6GEYJ102	M	1K	OHM	J 1/10W
R543	ERJ8GCYJ563	M	56K	OHM	J 1/8W	R656	ERJ6GEYJ102	M	1K	OHM	J 1/10W
R544	ERJ8ENF1332	M	13.3K	OHM	F 1/8W	R657	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R545	TARRS5B151J2	M	150	OHM	J 5W	R658	ERJ6GEYJ153	M	15K	OHM	J 1/10W
R547	ERJ6GEYJ470	M	47	OHM	J 1/10W	R659	ERJ6GEYJ102	M	1K	OHM	J 1/10W
R548	ERJ6GEYJ332	M	3.3K	OHM	J 1/10W	R660	ERJ6ENF2741	M	2.74K	OHM	F 1/10W
R549	ERG1SJ561	M	560	OHM	J 1W	R661	ERJ6GEYJ124	M	120K	OHM	J 1/10W
R551	ERX2SJ1R5	M	1.5	OHM	J 2W	R662	ERJ6GEYJ152	M	1.5K	OHM	J 1/10W
R552	ERX2SJ1R8	M	1.8	OHM	J 2W	R663	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R554	ERX3FJX6R8D	M	6.8	OHM	J 3W	R664	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R560	ERJ8GCYJ472	M	4.7K	OHM	J 1/8W	R665	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R561	ERJ6GEYJ680	M	68	OHM	J 1/10W	R666	ERJ6GEYJ273	M	27K	OHM	J 1/10W
R563	ERJ8GCYJ472	M	4.7K	OHM	J 1/8W	R667	ERJ6GEYJ222	M	2.2K	OHM	J 1/10W
R564	ERJ6GEYJ680	M	68	OHM	J 1/10W	R668	ERJ6GEYJ104	M	100K	OHM	J 1/10W
R566	ERJ8GCYJ472	M	4.7K	OHM	J 1/8W	R669	ERJ6GEYJ392	M	3.9K	OHM	J 1/10W
R567	ERJ6GEYJ680	M	68	OHM	J 1/10W	R672	ERDS2TJ102	C	1K	OHM	J 1/4W
R571	ERJ6GEYJ562	M	5.6K	OHM	J 1/10W	R674	ERDS1FJ391	C	390	OHM	J 1/2W
R572	ERJ6GEYJ562	M	5.6K	OHM	J 1/10W	R675	ERQ14AJ101	F	100	OHM	J 1/4W
R573	ERDS1FJ221	C	220	OHM	J 1/2W	R676	ERQ14AJ101	F	100	OHM	J 1/4W
R574	ERDS1FJ121	C	120	OHM	J 1/2W	R678	ERJ12YJ220	M	22	OHM	J 1/2W
R575	ERJ6GEYJ101	M	100	OHM	J 1/10W	R679	ERJ6GEYJ104	M	100K	OHM	J 1/10W
R576	ERJ6GEYJ101	M	100	OHM	J 1/10W	R680	ERJ6GEYJ104	M	100K	OHM	J 1/10W
R577	ERJ6GEYJ101	M	100	OHM	J 1/10W	R685	ERJ12YJ121	M	120	OHM	J 1/2W
R580	EROS1CKF5112	M	51.1K	OHM	F 1/2W	R686	ERJ12YJ121	M	120	OHM	J 1/2W
R581	EROS2CKF1152	M	11.5K	OHM	F 1/4W	R687	ERJ12YJ121	M	120	OHM	J 1/2W
R582	EROS1CKF5112	M	51.1K	OHM	F 1/2W	R690	ERJ6GEYJ104	M	100K	OHM	J 1/10W
R583	EROS2CKF6491	M	6.49K	OHM	F 1/4W	R691	ERJ6ENF2103	M	210K	OHM	F 1/10W
R584	ERDS1FJ562	C	5.6K	OHM	J 1/2W	R692	ERJ6GEYJ223	M	22K	OHM	J 1/10W
R586	EROS2CKF1211	M	1.21K	OHM	F 1/4W	R693	ERJ6ENF5621	M	5.62K	OHM	F 1/10W
R587	ERDS2TJ332	C	3.3K	OHM	J 1/4W	R694	ERJ6ENF2053	M	205K	OHM	F 1/10W
R588	TARRS5B150J2	M	15	OHM	J 5W	R695	ERJ6ENF1102	M	11K	OHM	F 1/10W
R589	TARRS5B150J2	M	15	OHM	J 5W	R696	ERJ12YJ104	M	100K	OHM	J 1/2W
R599	ERQ12HJ220	F	22	OHM	J 1/2W	R697	ERJ12YJ104	M	100K	OHM	J 1/2W
R601	ERG2SJ151	M	150	OHM	J 2W	R698	ERJ6GEYJ221	M	220	OHM	J 1/10W
R602	ERQ14AJ100	F	10	OHM	J 1/4W	R699	ERJ12YJ331	M	330	OHM	J 1/2W
R605	ERD25FJ100K	C	10	OHM	J 1/4W	R702	ERJ6GEYJ103	M	10K	OHM	J 1/10W
R606	ERG3FJ822	M	8.2K	OHM	J 3W	R703	ERJ6GEYJ393	M	39K	OHM	J 1/10W

Ref.No.	Part No.	Description				
R704	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R706	ERJ6GEYJ221	M	220	OHM	J	1/10W
R708	ERJ6GEYJ823	M	82K	OHM	J	1/10W
R709	ERJ6GEYJ101	M	100	OHM	J	1/10W
R714	ERJ6ENF1541	M	1.54K	OHM	F	1/10W
R715	EROS2CKF5620	M	562	OHM	F	1/4W
R717	ERDS1FJ332	C	3.3K	OHM	J	1/2W
R718	ERDS1FJ332	C	3.3K	OHM	J	1/2W
R720	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R741	ERJ6ENF1002	M	10K	OHM	F	1/10W
R742	ERJ8ENF1692	M	16.9K	OHM	F	1/8W
R751	ERJ6ENF1001	M	1K	OHM	F	1/10W
R752	ERJ6ENF2553	M	255K	OHM	F	1/10W
R753	ERJ6ENF1001	M	1K	OHM	F	1/10W
R754	ERJ6ENF2553	M	255K	OHM	F	1/10W
R767	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R768	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R773	ERJ6ENF3922	M	39.2K	OHM	F	1/10W
R774	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W
R775	ERQ14AJ100	F	10	OHM	J	1/4W
R777	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R778	ERJ8GCYJ682	M	6.8K	OHM	J	1/8W
R779	ERJ6ENF2941	M	2.94K	OHM	F	1/10W
R789	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R790	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W
R799	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R801	ERC12AGK394	S	390K	OHM	K	1/2W
R802	ERJ6GEYJ273	M	27K	OHM	J	1/10W
R803	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R805	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R806	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R807	ERJ8GCYJ562	M	5.6K	OHM	J	1/8W
R808	ERJ6GEYJ471	M	470	OHM	J	1/10W
R809	ERJ12YJ473	M	47K	OHM	J	1/2W
R810	ERJ6GEYJ391	M	390	OHM	J	1/10W
R811	ERDS1FJ224	C	220K	OHM	J	1/2W
R812	ERDS1FJ274	C	270K	OHM	J	1/2W
R813	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R814	ERJ6GEYJ151	M	150	OHM	J	1/10W
R815	ERJ6GEYJ681	M	680	OHM	J	1/10W
R816	ERJ6ENF3011	M	3.01K	OHM	F	1/10W
R817	ERQ12AJ6R8	F	6.8	OHM	J	1/2W
R818	ERJ6GEYOR00	M	0	OHM		1/10W
R819	ERDS2TJ224	C	220K	OHM	J	1/4W
R820	ERDS2TJ224	C	220K	OHM	J	1/4W
R821	TARRS3B333J2	M	33K	OHM	J	3W
R822	ERJ6GEYJ182	M	1.8K	OHM	J	1/10W
R823	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R824	ERJ8GCYJ681	M	680	OHM	J	1/8W
R825	ERJ6GEYJ821	M	820	OHM	J	1/10W
R826	ERJ6GEYJ101	M	100	OHM	J	1/10W
R827	ERJ6ENF2431	M	2.43K	OHM	F	1/10W
R828	ERJ12YJ223	M	22K	OHM	J	1/2W
R829	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R830	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W
R831	ERJ6GEYJ473	M	47K	OHM	J	1/10W
R832	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R833	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R834	ERW2PKR12	W	0.12	OHM	K	2W
R835	ERDS1FJ224	C	220K	OHM	J	1/2W
R836	ERG2SJ223	M	22K	OHM	J	2W
R837	ERG2SJ223	M	22K	OHM	J	2W
R838	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R839	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R840	ERQ1CKPR39S	F	0.39	OHM	K	1W
R841	ERQ12AJR33HK	F	0.33	OHM	J	1/2W
R842	ERQ12HJ1R2	F	1.2	OHM	J	1/2W
R843	ERQ12AJR12HK	F	0.12	OHM	J	1/2W
R844	ERQ12AJR12HK	F	0.12	OHM	J	1/2W
R845	TAR18BKOR11Z	F	0.11	OHM	K	1/4W
R846	ERJ12YJ471	M	470	OHM	J	1/2W
R847	ERJ12YJ122	M	1.2K	OHM	J	1/2W
R848	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R849	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R850	ERJ12YJ103	M	10K	OHM	J	1/2W
R851	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R852	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R853	ERJ8GCYJ473	M	47K	OHM	J	1/8W
R854	ERX3FJX2R2D	M	2.2	OHM	J	3W
R855	ERJ6ENF3401	M	3.4K	OHM	F	1/10W
R856	ERJ6GEYJ333	M	33K	OHM	J	1/10W
R858	ERJ12YJ222	M	2.2K	OHM	J	1/2W
R859	ERJ12YJ222	M	2.2K	OHM	J	1/2W
R860	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R861	TAR18BKOR47Z	F	0.47	OHM	K	1/4W
R862	ERJ6ENF1002	M	10K	OHM	F	1/10W
R863	ERJ6GEYJ101	M	100	OHM	J	1/10W
R864	ERJ6GEYJ683	M	68K	OHM	J	1/10W
R865	ERDS1FJ224	C	220K	OHM	J	1/2W
R866	ERQ12HJ271	F	270	OHM	J	1/2W
R867	ERJ6ENF3741	M	3.74K	OHM	F	1/10W
R868	ERJ6ENF6651	M	6.65K	OHM	F	1/10W
R869	ERJ6ENF4221	M	4.22K	OHM	F	1/10W
R870	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R871	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R872	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R873	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R874	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R875	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R876	ERJ6ENF5110	M	511	OHM	F	1/10W
R877	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R878	ERJ6GEYJ823	M	82K	OHM	J	1/10W
R879	ERG1SJ683	M	68K	OHM	J	1W
R880	ERJ6ENF1211	M	1.21K	OHM	F	1/10W
R881	ERJ6ENF2211	M	2.21K	OHM	F	1/10W
R882	ERDS2TJ102	C	1K	OHM	J	1/4W
R883	ERQ12HJ391	F	390	OHM	J	1/2W
R884	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R885	ERQ14AJ101	F	100	OHM	J	1/4W
R886	ERQ14AJ101	F	100	OHM	J	1/4W
R887	ERJ12YJ220	M	22	OHM	J	1/2W
R888	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R889	ERJ6GEYJ822	M	8.2K	OHM	J	1/10W
R890	ERX3FJX1R6D	M	1.6	OHM	J	3W
R891	TRPF5BOMO90A	POSISTOR				
R892	ERDS1FJ470	C	47	OHM	J	1/2W
R893	ERDS1FJ221	C	220	OHM	J	1/2W
R894	ERJ6GEYJ390	M	39	OHM	J	1/10W
R895	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R896	ERJ12YJ102	M	1K	OHM	J	1/2W
R897	ERJ12YJ104	M	100K	OHM	J	1/2W
R898	ERJ12YJ104	M	100K	OHM	J	1/2W
R899	ERJ12YJ104	M	100K	OHM	J	1/2W
R901	ERJ6GEYJ103	M	10K	OHM	J	1/10W

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
R902	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W	R1029	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R903	ERDS2TJ562	C	5.6K	OHM	J	1/4W	R1030	ERJ6GEYJ154	M	150K	OHM	J	1/10W
R908	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1031	ERDS2TC0	C	0	OHM		1/4W
R918	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1040	ERJ6ENF1101	M	1.1K	OHM	F	1/10W
R923	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1041	ERJ6ENF2371	M	2.37K	OHM	F	1/10W
R930	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1042	ERJ6ENF6810	M	681	OHM	F	1/10W
R932	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1043	ERJ6ENF9531	M	9.53K	OHM	F	1/10W
R933	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1044	ERJ6ENF3241	M	3.24K	OHM	F	1/10W
R937	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1045	ERJ6ENF1501	M	1.5K	OHM	F	1/10W
R938	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1046	ERJ6GEYJ101	M	100	OHM	J	1/10W
R939	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1047	ERJ6GEYJ101	M	100	OHM	J	1/10W
R940	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1050	ERQS2CKF84R5	M	84.5	OHM	F	1/4W
R941	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1051	ERJ6GEYJ820	M	82	OHM	J	1/10W
R943	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1055	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R944	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1056	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R945	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1058	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R946	ERJ8GCYJ271	M	270	OHM	J	1/8W	R1059	ERDS2TJ330	C	33	OHM	J	1/4W
R947	ERJ6GEYJ751	M	750	OHM	J	1/10W	R1060	ERQS2CKF84R5	M	84.5	OHM	F	1/4W
R949	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1061	ERJ6GEYJ820	M	82	OHM	J	1/10W
R950	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1065	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R951	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1066	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R952	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1075	ERDS2TJ224	C	220K	OHM	J	1/4W
R960	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1076	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R962	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1077	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R963	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1080	ERJ6ENF1202	M	12K	OHM	F	1/10W
R969	ERJ6GEYJ334	M	330K	OHM	J	1/10W	R1081	ERJ6ENF2052	M	20.5K	OHM	F	1/10W
R970	ERJ6GEYJ334	M	330K	OHM	J	1/10W	R1082	ERJ6ENF1002	M	10K	OHM	F	1/10W
R971	ERJ6GEYJ334	M	330K	OHM	J	1/10W	R1083	ERJ6ENF2702	M	27K	OHM	F	1/10W
R973	ERDS2TJ103	C	10K	OHM	J	1/4W	R1104	ERJ6GEYJ101	M	100	OHM	J	1/10W
R974	ERDS2TJ103	C	10K	OHM	J	1/4W	R1106	ERJ6GEYJ220	M	22	OHM	J	1/10W
R975	ERDS2TJ103	C	10K	OHM	J	1/4W	R1109	ERJ6ENF7870	M	787	OHM	F	1/10W
R977	ERJ6GEYJ223	M	22K	OHM	J	1/10W	R1110	ERJ6ENF5600	M	560	OHM	F	1/10W
R978	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W	R1111	ERJ6ENF39R0	M	39	OHM	F	1/10W
R979	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W	R1113	ERQS2CKF4702	M	47K	OHM	F	1/4W
R981	ERJ6GEYJ333	M	33K	OHM	J	1/10W	R1114	ERQS2CKF3091	M	3.09K	OHM	F	1/4W
R982	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1116	ERJ6ENF8200	M	820	OHM	F	1/10W
R983	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1118	ERJ8GCYJ331	M	330	OHM	J	1/8W
R984	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1119	ERG2SJ123	M	12K	OHM	J	2W
R985	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1120	ERJ6ENF1002	M	10K	OHM	F	1/10W
R995	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1121	ERJ6ENF1002	M	10K	OHM	F	1/10W
R997	ERJ6ENF1001	M	1K	OHM	F	1/10W	R1122	ERDS1FJ220	C	22	OHM	J	1/2W
R998	ERJ6ENF2553	M	255K	OHM	F	1/10W	R1123	ERDS2TJ102	C	1K	OHM	J	1/4W
R999	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1124	ERJ6GEYJ123	M	12K	OHM	J	1/10W
R1004	ERJ6GEYJ101	M	100	OHM	J	1/10W	R1125	ERJ6ENF1202	M	12K	OHM	F	1/10W
R1006	ERJ6GEYJ220	M	22	OHM	J	1/10W	R1126	ERQS2CKF2262	M	22.6K	OHM	F	1/4W
R1009	ERJ6ENF7870	M	787	OHM	F	1/10W	R1127	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1010	ERJ6ENF5600	M	560	OHM	F	1/10W	R1128	ERJ6ENF7680	M	768	OHM	F	1/10W
R1011	ERJ6ENF39R0	M	39	OHM	F	1/10W	R1129	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1013	ERQS2CKF4702	M	47K	OHM	F	1/4W	R1130	ERJ6GEYJ154	M	150K	OHM	J	1/10W
R1014	ERQS2CKF3091	M	3.09K	OHM	F	1/4W	R1131	ERDS2TJ101	C	100	OHM	J	1/4W
R1016	ERJ6ENF8200	M	820	OHM	F	1/10W	R1140	ERJ6ENF1101	M	1.1K	OHM	F	1/10W
R1018	ERJ8GCYJ331	M	330	OHM	J	1/8W	R1141	ERJ6ENF2371	M	2.37K	OHM	F	1/10W
R1019	ERG2SJ123	M	12K	OHM	J	2W	R1142	ERJ6ENF6810	M	681	OHM	F	1/10W
R1020	ERJ6ENF1002	M	10K	OHM	F	1/10W	R1143	ERJ6ENF9531	M	9.53K	OHM	F	1/10W
R1021	ERJ6ENF1002	M	10K	OHM	F	1/10W	R1144	ERJ6ENF3241	M	3.24K	OHM	F	1/10W
R1022	ERDS1FJ220	C	22	OHM	J	1/2W	R1145	ERJ6ENF1501	M	1.5K	OHM	F	1/10W
R1023	ERDS2TJ102	C	1K	OHM	J	1/4W	R1146	ERJ6GEYJ101	M	100	OHM	J	1/10W
R1024	ERJ6GEYJ123	M	12K	OHM	J	1/10W	R1147	ERJ6GEYJ101	M	100	OHM	J	1/10W
R1025	ERJ6ENF1202	M	12K	OHM	F	1/10W	R1150	ERQS2CKF84R5	M	84.5	OHM	F	1/4W
R1026	ERQS2CKF2262	M	22.6K	OHM	F	1/4W	R1151	ERJ6GEYJ820	M	82	OHM	J	1/10W
R1027	ERJ6ENF1002	M	10K	OHM	F	1/10W	R1155	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1028	ERJ6ENF7680	M	768	OHM	F	1/10W	R1156	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W

Ref.No.	Part No.	Description				
R1158	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R1159	ERDS2TJ330	C	33	OHM	J	1/4W
R1160	EROS2CKF84R5	M	84.5	OHM	F	1/4W
R1161	ERJ6GEYJ820	M	82	OHM	J	1/10W
R1165	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1166	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R1170	ERDS2TJ122	C	1.2K	OHM	J	1/4W
R1175	ERDS2TJ224	C	220K	OHM	J	1/4W
R1176	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R1177	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1180	EROS2CKF1202	M	12K	OHM	F	1/4W
R1181	ERJ6ENF2052	M	20.5K	OHM	F	1/10W
R1182	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1183	ERJ6ENF2702	M	27K	OHM	F	1/10W
R1204	ERJ6GEYJ101	M	100	OHM	J	1/10W
R1206	ERJ6GEYJ220	M	22	OHM	J	1/10W
R1209	ERJ6ENF7870	M	787	OHM	F	1/10W
R1210	ERJ6ENF5600	M	560	OHM	F	1/10W
R1211	ERJ6ENF47R0	M	47	OHM	F	1/10W
R1213	EROS2CKF4702	M	47K	OHM	F	1/4W
R1214	EROS2CKF3091	M	3.09K	OHM	F	1/4W
R1216	ERJ6ENF8200	M	820	OHM	F	1/10W
R1218	ERJ8GCYJ331	M	330	OHM	J	1/8W
R1219	ERG2SJ123	M	12K	OHM	J	2W
R1220	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1221	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1222	ERDS1FJ220	C	22	OHM	J	1/2W
R1223	ERDS2TJ102	C	1K	OHM	J	1/4W
R1224	ERJ6GEYJ123	M	12K	OHM	J	1/10W
R1225	ERJ6ENF1202	M	12K	OHM	F	1/10W
R1226	EROS2CKF2262	M	22.6K	OHM	F	1/4W
R1227	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1228	ERJ6ENF7680	M	768	OHM	F	1/10W
R1229	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1230	ERJ6GEYJ154	M	150K	OHM	J	1/10W
R1231	ERDS2TC0	C	0	OHM		1/4W
R1240	ERJ6ENF1101	M	1.1K	OHM	F	1/10W
R1241	ERJ6ENF2371	M	2.37K	OHM	F	1/10W
R1242	ERJ6ENF6810	M	681	OHM	F	1/10W
R1243	ERJ6ENF9531	M	9.53K	OHM	F	1/10W
R1244	ERJ6ENF3241	M	3.24K	OHM	F	1/10W
R1245	ERJ6ENF1501	M	1.5K	OHM	F	1/10W
R1246	ERJ6GEYJ101	M	100	OHM	J	1/10W
R1247	ERJ6GEYJ101	M	100	OHM	J	1/10W
R1250	EROS2CKF84R5	M	84.5	OHM	F	1/4W
R1251	ERJ6GEYJ820	M	82	OHM	J	1/10W
R1255	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1256	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R1258	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R1259	ERDS2TJ330	C	33	OHM	J	1/4W
R1260	EROS2CKF84R5	M	84.5	OHM	F	1/4W
R1261	ERJ6GEYJ820	M	82	OHM	J	1/10W
R1265	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1266	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R1275	ERD25FJ224K	C	220K	OHM	J	1/4W
R1276	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R1277	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1280	ERJ6ENF1202	M	12K	OHM	F	1/10W
R1281	ERJ6ENF2052	M	20.5K	OHM	F	1/10W
R1282	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1283	ERJ6ENF2702	M	27K	OHM	F	1/10W
R1301	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W

Ref.No.	Part No.	Description				
R1302	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1303	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R1304	ERDS2TJ102	C	1K	OHM	J	1/4W
R1305	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1306	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1307	ERJ6GEYJ151	M	150	OHM	J	1/10W
R1308	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1312	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1313	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1314	ERJ6GEYJ331	M	330	OHM	J	1/10W
R1315	ERJ6GEYJ474	M	470K	OHM	J	1/10W
R1316	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1317	ERJ6GEYJ912	M	9.1K	OHM	J	1/10W
R1318	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W
R1320	ERJ6ENF2701	M	2.7K	OHM	F	1/10W
R1322	ERJ6GEYJ100	M	10	OHM	J	1/10W
R1324	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R1325	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R1326	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R1327	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R1328	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1329	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1331	ERJ6ENF1962	M	19.6K	OHM	F	1/10W
R1332	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1333	ERJ12YJ681	M	680	OHM	J	1/2W
R1336	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1337	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1338	ERJ6GEYJ561	M	560	OHM	J	1/10W
R1339	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R1340	ERJ12YJ681	M	680	OHM	J	1/2W
R1341	ERJ12YJ681	M	680	OHM	J	1/2W
R1342	ERJ6GEYJ220	M	22	OHM	J	1/10W
R1381	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W
R1385	ERJ6GEYJ474	M	470K	OHM	J	1/10W
R1390	ERDS1FJ561	C	560	OHM	J	1/2W
R1391	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W
R1392	ERG1SJ123	M	12K	OHM	J	1W
R1395	ERJ6GEYJ474	M	470K	OHM	J	1/10W
R1396	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R1401	ERJ6GEYJ331	M	330	OHM	J	1/10W
R1402	ERJ6ENF2702	M	27K	OHM	F	1/10W
R1403	ERJ6ENF3301	M	3.3K	OHM	F	1/10W
R1404	ERJ6ENF2212	M	22.1K	OHM	F	1/10W
R1405	ERJ6ENF5621	M	5.62K	OHM	F	1/10W
R1406	ERJ6ENF8203	M	820K	OHM	F	1/10W
R1408	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1409	ERJ6ENF1002	M	10K	OHM	F	1/10W
R1410	ERJ6GEYJ124	M	120K	OHM	J	1/10W
Z1051A	ERJ6GEY0R00	M	0	OHM		1/10W
Z1061A	ERJ6GEY0R00	M	0	OHM		1/10W
Z1151A	ERJ6GEY0R00	M	0	OHM		1/10W
Z1161A	ERJ6GEY0R00	M	0	OHM		1/10W
Z1251A	ERJ6GEY0R00	M	0	OHM		1/10W
Z1261A	ERJ6GEY0R00	M	0	OHM		1/10W
Z501	ERD25TC0	C	0	OHM		1/4W
Z502	ERD25TC0	C	0	OHM		1/4W

OTHERS

TES9148-2	SPRING(CRT PCB EARTH)
TES9511	LED SPRING
THE902N	D-SUB SCREW
TJS8A4830	BNC TERMINAL

	Ref.No.	Part No.	Description
		TJS8A9600	15P CONNECTOR(D-SUB)
		TMK87907	MICA SHEET
		TMK87919	INSULATION SHEET
		TMM16452	CLAMPER(LONG)
		TMM7464	CLAMPER(SHORT)
		TUC87559-1	AC INLET BRACKET
		TUC87577	SHIELD PLATE(VIDEO PCB)
		TUW85513	BNC TERMINAL BRACKET
		TUX86406	FBT BRACKET
		XTV3+12J	SCREW
		XTV3+16J	SCREW
		XWGT40660	WASHER
		XWG3F10	WASHER
	CL1	TMM85541	CLAMPER(SMALL)
⚠	F801	XBA2C50TB15L	FUSE(5.0A)
	FG2	TJC85341	EARTH LUG
	FG3	TJC85341	EARTH LUG
	FG4	TJC85341	EARTH LUG
	FG5	TJE85317	LUG TERMINAL
	FS801	TJC85502T	FUSE HOLDER
	FS803	TJC85502T	FUSE HOLDER
	JC101	TJC85341	EARTH LUG
	JC102	TJC85341	EARTH LUG
	N7A	TJS9A8291	11P CONNECTOR(L-TYPE)
	N7B	TJS9A8290	11P CONNECTOR
	N8A	TJS9A8260	9P CONNECTOR(L-TYPE)
	N8B	TJS9A8250	9P CONNECTOR
	N9A	TJS9A8220	24P CONNECTOR
	N9B	TJS9A8210	24P CONNECTOR(L-TYPE)
	N10A	EMCS0364MB	3P CONNECTOR(BLUE)
	N10B	EMCS0364MB	3P CONNECTOR(BLUE)
	N12A	TJS9A8090	25P CONNECTOR
	N12B	TJS9A8090	25P CONNECTOR
	N15A	TJS9A848A	7P CONNECTOR
	N15B	TJS9A849A	7P CONNECTOR(L-TYPE)
	N16A	EMCS0364M	3P CONNECTOR
	N16B	EMCS0351ML	3P CONNECTOR(L-TYPE)
	N101	TJS9A863A	2P CONNECTOR
	N104	TJC85342T	LUG TERMINAL
	N105	TJC85342T	LUG TERMINAL
	N106	TJC85342T	LUG TERMINAL
	N381	TJS8A5130	CRT SOCKET
	N382A	TEL302-9	TERMINAL
	N382B	TEL302-9	TERMINAL
	N511B	TJS3A8010	3P CONNECTOR
⚠	N801	TJS9A9760	AC INLET
	N803A	TJS8A8570	3P CONNECTOR
	N803B	TJS8A8570	3P CONNECTOR
	N901A	TJS9A846A	8P CONNECTOR
	N901B	TJS9A847A	8P CONNECTOR(L-TYPE)
	N901C	EMCS0464M	4P CONNECTOR
	N510-1	TEL302-9	TERMINAL
	N510-2	TEL302-9	TERMINAL
	N510-3	TEL302-9	TERMINAL
	N510-4	TEL302-9	TERMINAL
	N511-1	TEL302-9	TERMINAL
	N511-2	TEL302-9	TERMINAL
	N511-3	TEL302-9	TERMINAL
	N802-1	TEL302-9	TERMINAL
	N802-2	TEL302-9	TERMINAL
⚠	PC830	TLP721FD4GRH	PHOTO COUPLER
⚠	PC831	TLP721FD4GR	PHOTO COUPLER
⚠	PC832	TLP750D4	PHOTO COUPLER
⚠	PC833	S21ME4FY	PHOTO COUPLER
	RL571	TSE80892	RELAY
	S290	TAG10003	SPARK GAP
	S301	TAGDSP751N	SPARK GAP
	S302	TAGDSP751N	SPARK GAP
	S691	TAGDSP201MF	SPARK GAP
	S1001	TAGDSP201MF	SPARK GAP
	S1101	TAGDSP201MF	SPARK GAP
	S1201	TAGDSP201MF	SPARK GAP
⚠	SW801	ESB8278V	SWITCH(POWER)
	SW901	EVQ33405R	SWITCH
	SW902	EVQ33405R	SWITCH
	SW903	EVQ33405R	SWITCH
	SW904	EVQ33405R	SWITCH
	TP1	TEL302-9	TERMINAL
	TP2	TEL302-9	TERMINAL
	TP301	TEL302-9	TERMINAL
	X901	TSS2165TM	CRYSTAL OSCILLATOR

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